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EDITED BY  
WILLIAM PROCTER, JR.  
Professor of Pharmacy in the Philadelphia College of Pharmacy.

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AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1856.

CONVENIENT MODES FOR ADMINISTERING COD-LIVER OIL.

By J. M. MAISCH.

Cod-liver oil has, for most patients, who are advised to take it, an unpleasant odor and disagreeable taste, in such a degree, as to cause an aversion of the palate and nausea of the stomach. Children, although, at first, disgusted with its taste, usually become accustomed to it, and even find it pleasant and agreeable; but adults, in many cases, cannot overcome the aversion, no matter whether they take the oil with bitters, peppermint, mucilage, milk or brown stout or porter. To avoid the nauseous taste, Deschamps in 1843, proposed a cod-liver oil soap to be prepared of 60 parts of the oil, 8 parts of caustic soda and 2 of water. This soap is given in pills, but it is evident that in order to administer the oil in a proper dose, the patient would have to take a large number of pills, about sixty, each weighing four grs., might be considered equal to a teaspoonful of the oil. Syrups of cod-liver oil have been recommended by Duclos and by Mouchon, which consist of emulsions of the oil with gum arabic and water or peppermint water, to which simple syrup or syrup of gum arabic is added. Both syrups do not cover much of the unpleasantness of the oil, and have the material disadvantage of being bulky and liable to spoil.

Being called upon, I attempted to find out a mode of preparing the oil, which would combine the advantages of correcting its nauseousness, and having it in a bulk as small as possible, without much liability to undergo unfavorable changes on keeping the preparation for a reasonable time. The following formula, I

1

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think, will answer these demands, the preparations having agreed well with patients, who were vomited by the pure oil.

|                   |               |                    |          |
|-------------------|---------------|--------------------|----------|
| R. Magnes. ust.   | ℥j.           | R. Magnes. calc.   | ℥j.      |
| Aq. Rosæ          | f. ʒj.        | Aq. commun.        | f. ʒi.   |
| Olei Morrhuæ.     | f. ʒij.       | Olei Morrhuæ.      | f. ʒij.  |
| Aq. Amygd. Amar.  | f. ʒij.       | Olei Anisi         | gtt. ij. |
| Syr. Rubi idæi,   | f. ʒvj.       | Extract. Glycyrrh. | ʒij.     |
| M.                |               | Syrup Althææ.      | f. ʒvj.  |
|                   |               | M.                 |          |
| R. Potass. carb.  | ʒss. vel. ʒj. |                    |          |
| Aq. flor. Aurant. | f. ʒj.        |                    |          |
| Mel. Rosat.       | f. ʒj.        |                    |          |
| Olei Morrhuæ.     | f. ʒij.       | M.                 |          |

The carbonate of potassa is first to be dissolved or the calcined magnesia to be mixed with the water, then the oil added, to which, while floating on the water, must be added the oil of aniseed (or peppermint, fennel, &c.,) and after shaking, the syrup is to be admixed by agitation of the vial. A partial saponification takes place, and the cod-liver oil soap, acting as intermedium, a homogeneous mixture is formed on shaking, each fluidounce of which, contains a tablespoonful of the oil. By the formation of soap, its taste is well covered, and from the action of the aromatic, &c., it agrees well with the stomach. The mixture separates on standing, and must, therefore, be shaken before use, when it will readily mix again. The color of the raspberry syrup, in the above formula, is changed to a blue violet without impairing its fragrance; other fruit syrups, such as blackberry, mulberry, cherry, &c., may be substituted for it, the darker ones of which, hardly undergo a perceptible change of color.

Together with cod liver oil, if prepared in the above manner, iodide of potassium, morphia, opium, colchicum, digitalis, hyoscyamus or any other medicine, may be administered at the same time, as most medicines are soluble in water, that might be used in diseases in which cod-liver oil is indicated.

*New York, December, 1855.*

## ELEMENTARY ANALYSIS OF SO-CALLED "FALL STRAINED SPERM OIL."

By EDWARD R. SQUIBB, M. D., U. S. Navy.

Assistant Director Naval Laboratory, New York.

In examining a new artificial oil, offered as a substitute for the so-called sperm oils in use by the different departments of the General Government for light houses, and for lubricating machinery, it became necessary to make an analysis of the so-called sperm oil, at present generally used for these purposes, as a standard for comparison.

As the results of this analysis differ materially from any of the few to be found in the usual chemical authorities—and as it is later than any that I know of, and appertains to the oil now in common use, as "Fall Strained Sperm Oil," I offer it for publication, that it may be available to those whose research may be in this direction.

The physical properties of the oil examined were as follows: Clear, pale yellow, slightly tenacious, with the fishy odor rather of whale than sperm oil. Its viscosity was found to be 11.09, compared with distilled water as a standard of unity.

Its specific gravity was .881. At 44° F. became opalescent, and at 40° opaque. At 30° too thick to pour well, and at 8° of the consistence of tallow, nearly.

(Winter strained sperm oil remains transparent when poured upon ice at temperatures above freezing.)

Although furnished upon contract, as "pure sperm oil, fall strained," it is probably quite free from any admixture of pure sperm oil, as obtained from the head of the sperm whale, but is rather an admixture of the blubber oils of the sperm and common whales. It burns with a clear white steady flame at first, but even in lamps with a strong draught, requires frequent trimming. In the Carcel lamp (used in light houses generally,) it burns with less need of frequent trimming, but leaves a residue that cannot be used for illumination, and which must be removed from the lamps from time to time.

The quantity analysed was .2033 grammes.

|                    |          |    |        |           |
|--------------------|----------|----|--------|-----------|
| Yielding of Carbon | .16510   | or | 81.20  | per cent. |
| Hydrogen           | .02604   | "  | 12.80  | "         |
| Oxygen             | .01216   | "  | 6.00   | "         |
| Nitrogen           | a trace. |    |        |           |
|                    | <hr/>    |    | <hr/>  |           |
|                    | .2033    |    | 100.00 |           |

The combustion was effected by oxide of copper, by Liebig's method; and the oil was analysed in the condition in which it is used,—that is, without depuration, or even drying farther than that the capsule containing the oil for combustion was kept 12 hours over sulphuric acid.

The analysis was repeated three times without material variation, and may be considered accurate.

*U. S. Naval Laboratory, New York, Dec. 6th, 1855.*

#### ON A NEW GUN COTTON.

BY ALONZO CALDWELL.

To the Editor of the American Journal of Pharmacy:

DEAR SIR:—I respectfully submit to your kind attention the following result of an experiment made some six or eight years ago, on the then newly invented gun cotton. I am thus led to give publicity to the matter by the many inquiries lately made in regard to its properties as a substitute for gunpowder, either as a blasting agent, or as an advantage in the use of fire arms. The subject, however, is worthy of further investigation.

I procured from one of our most skilful chemists, a small quantity of newly prepared gun cotton, and having reserved one-half for future experiments, placed the remainder in a filtered saturated solution of chlorate of potash, and allowed it to remain there for fifteen minutes. It was then gently pressed between the folds of a clean linen rag, and dried over a heat of 150 degrees. The cotton thus prepared exploded much quicker, and more like the violent fulminating silver, than the ordinary gun cotton.

By the request, and in the presence of Mr. Scholes, of Baltimore street, I made a few experimental shots with the two preparations from a pair of patent duelling pistols, resulting as follows: Standing at the distance of twenty feet, (the length of

the yard,) I fired a pistol loaded with nine grains by weight of the ordinary cotton, at a piece of yellow pine door, one inch in thickness. The ball entered the door about half way. I then fired with two grains of the cotton which had been treated with the solution of chlorate of potash. The pistol bursted into several pieces, part of the nipple entering my fore finger, the mark of which I still bear. The remaining pistol was then loaded with one grain of the same cotton, when the ball passed entirely through the door, making a perfectly smooth perforation. The rebound of the pistol was so great as to cause me pain for several hours after firing. I have never since experimented with the cotton, but think it might be used admirably for blasting purposes.

Respectfully yours, &c.,

ALONZO CALDWELL.

*Baltimore, Dec. 10th, 1855.*

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#### ON ACID NITRATE OF MERCURY.

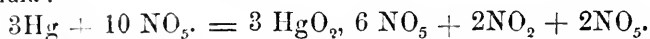
By B. A. SHAKSPEARE.

To the Editor of the American Journal of Pharmacy.

Having had occasion to prepare the acid bi-nitrate of the deutoxide of mercury to fill an order, I proceeded according to the Dublin recipe in the U. S. Dispensatory, as follows: "Take pure mercury, two ounces, (avoird.) nitric acid, one fluidounce and a half, (imperial measure,) distilled water, one ounce and a half; in the acid first diluted with water, dissolve the mercury with the application of heat, and evaporate the solution to the bulk of two fluidounces and a half."

Proceeding as above directed I failed to make the solution, finding, at the close, not only a heavy crop of crystals, the basic nitrate and subnitrate, but also a considerable portion of undissolved mercury. I then proceeded to investigate the causes of failure, by forming a recipe from the chemical formula of the elementary constituents of the preparation. Now to form an acid bi-nitrate of the deutoxide, three equivalents of mercury will require eight equivalents of dry acid to form the neutral salt, and one or two additional equivalents for the acid solution; two additional equivalents being necessarily broken up to furnish

to the mercury six equivalents oxygen; whilst two eqs. binoxide nitrogen are given off as gas. The reaction is represented by the formula:



In the Dublin recipe the quantity of acid is insufficient, as will appear from the following calculation—

One and a half ounces of distilled water, imperial measure, weigh 656.25 grains; the same bulk of acid of the sp. gr. 1.5, the strength ordered by the Dublin Pharmacopœia will weigh 984.375, which, according to Professor Ure, will contain but 79.7 per cent. of dry acid; then  $984.375 \times .797 = 784.54$  weight of dry acid in  $1\frac{1}{2}$  ounces. Two ounces of mercury weigh 875 grains, its combining equivalent is 101, while nitric acid is represented by the No. 54; then in round numbers  $\frac{784.54}{54} = 14\frac{1}{2}$  equivalents nitric acid, and  $\frac{875}{101} = 8\frac{3}{4}$  equivalents of mercury, which proportion is evidently insufficient to dissolve the mercury.

I would propose, as a correction of the error,\* the following

\* [NOTE.—After the above paper was in type, and too late to consult the author, we discovered that by assuming the equivalent of mercury as 101, instead of 202, the old number, he had rendered his calculations incorrect, and the formula based on them equally so. In following the Dublin Pharmacopœia he must have used a weak acid, probably the commercial nitric acid sp. gr. 1.34, which will account for his ill success. Taking the numbers used above for the Dublin proportions, viz., 875 grs. of mercury and 984 grs. of nitric acid, sp. gr. 1.5, the equivalents are  $4\frac{1}{2}$  Hg. to  $14\frac{1}{2}$  NO<sup>5</sup>, which are as 3 Hg. to 10 NO<sup>5</sup>.

Now the author having adopted 101 as the equivalent of mercury, should have used but one equivalent of nitric acid to make the nitrate of the red oxide of mercury, whereas he evidently intended to use the old equivalent 202 by his calling the salt bi-nitrate of the deutoxide. In the recipe proposed, the ratio of equivalents is as 3 Hg to  $15\frac{3}{4}$  NO<sup>5</sup>, which gives an excess of more than five equivalents of nitric acid, far too great an excess to render its use admissible. In view of the fact that much of the commercial white nitric acid has a sp. gr. of about 1.34, we have calculated the following as yielding a preparation nearly equivalent to that of the Dublin Pharmacopœia.

|                             |                        |
|-----------------------------|------------------------|
| Take of Mercury,            | 2 ounces (Troy).       |
| Nitric acid (sp. gr. 1.34), | $3\frac{3}{4}$ (Troy). |

Dissolve the mercury in the acid by aid of heat, and evaporate the solution until it measures two fluid ounces and a half.—EDITOR AMER. JOUR. PHARM.]



recipe, which will give a uniform strength to the solution, and requires only our officinal acid, (sp. gr. 1.42,) instead of the stronger, which it is always difficult to procure.

**R.** Hydrargyrum,  $\bar{\text{z}}$ i (Troy.)  
 Acid. nitric. (sp. gr. 1.42) f.  $\bar{\text{z}}$ ii.  
 Aqua dest. f.  $\bar{\text{z}}$ iss.

In the acid diluted with the water, dissolve the mercury with the application of heat, and evaporate to two fluidounces.

This recipe will be found to give the proper proportion of acid, or nearly 10 equivalents of acid to three of mercury; our nitric acid of the sp. gr. 1.42 is a quadrahydrated acid, represented thus,  $\text{NO}_5 + 4\text{HO}$ , then in numbers

$$3\text{Hg} = 3(101 = 303,) \text{ and } 10(\text{NO}_5 + 4\text{HO}) = 10(54 + 36) = 900.$$

303 parts of mercury require 900 parts acid,

one ounce, 480 grains of mercury gives the proportion,

303 : 900 :: 480 : 1426. grains weight of acid required,  
 which is nearly three ounces, troy.

A fluidounce of water weighs 455.69 grains, consequently,

$$\frac{\begin{smallmatrix} (1426) \\ 1.42 \end{smallmatrix}}{455.69} = \text{two fluidounces and a fifth.}$$

The importance of this preparation to the medical profession renders it desirable that a uniform, correct recipe should be adopted for its preparation.

*Cynthiana, Kentucky, Oct. 2d, 1855.*

## CALCINED MAGNESIA.

By J. B. JAMES, M. D.

Pure calcined magnesia, however prepared, has a taste somewhat resembling lime, and this taste is not removed either by allowing it to absorb water from the atmosphere, or by suspending it in water.

If a fine, soft carbonate be pulverized and calcined at a low red heat, a small proportion of chloride of ammonium, chloride of magnesium, or hydrochloric acid having been previously mixed with a portion of it, and placed at the bottom of the vessel in which it is to be calcined, the product will be more *compact* than

if it had been calcined without this addition, and should it contain a small amount of lime, this will have become a chloride, and it will consequently be less caustic.

Husband's calcined magnesia, the most popular of the imitations of Henry's, is, like the latter, not a pure magnesia, but differs from it in containing water and an organic salt. If it be washed with distilled water it will be found to have the ordinary taste of good magnesia, while the water will have a pleasant saline taste, and will exhibit with chemical reagents the characteristics of a citrate. The amount of this salt contained in it is not uniform, but from an ordinary sample about two and a half per cent. of soluble salts may be obtained by washing and evaporation. Besides several incidental and confirmatory tests, the principal ones upon which I relied were, precipitating the solution (obtained by washing the magnesia with water) with acetate of lead, and finding the precipitate soluble in ammonia; and comparative tests with solution of sulphate of soda, and sulphate, hydrochlorate and citrate of magnesia.\*

*Trenton, N. J., Dec. 7th, 1855.*

\*[At the request of the author we washed a portion of Husband's magnesia, and obtained but six-tenths of one per cent. of soluble matter on evaporating the washings. A portion of this, was dissolved in water and the precipitate by acetate of lead, not in excess, was found to re-dissolve on the addition of liquor ammonia, or a solution of citrate of potassa; and when another portion of the salt is heated to redness in a tube, covered with a little ordinary magnesia, to exclude the air, it is at once blackened, indicative of organic matter. Whether this is citric acid, as believed by the author, whether it is an accidental contamination, or an intentional addition, with a view to modifying the taste and smoothness of the earth, we did not pursue our experiments far enough to determine, but in either case its presence is medically unimportant, unless existing in larger proportion than our experiments indicate. There is a feature of this magnesia, however, which deserves attention whenever Husband's magnesia is, by the physician or apothecary, used with a view to its basic power, and that is the fact of its being a partial hydrate, a fact which has been shown before. (See vol. xxii. page 383, and vol. xxiv. page 199 of this Journal.) In the trial made at this time, 100 grains taken from a closed bottle lost 11 grains by exposure to a red heat for twenty minutes.—*ED. AMER. JOUR. PHARM.*]

## A PROPOSED TEST FOR MORPHIA.

By ROBERT F. FAIRTHORNE.

When Labarraque's solution of chlor. soda is mixed with the solution of sulphate of morphia, U. S. P., a light orange colored transparent mixture is produced. The salts of morphia, when moistened with the solution chlor. soda, become of a dark orange.

To a solution of sulphate of morphia made in the proportion of (gr. i. to  $\mathfrak{z}$ i. of water) a small quantity of Labarraque's solution was added, which produced a bright orange color, which, when a little aq. ammon. was mixed with it, changed to a dark red. A small quantity of chloride of lime added to the above named solution of morphia, has the same effect upon it as Labarraque's solution, but if added in excess the solution will be colorless. These changes of color are owing to the action of chlorine on morphia.

*Experiment.*—Six grains of pure morphia were put into a vessel containing  $\frac{1}{2}$  oz. of distilled water, in which but a small portion dissolved, owing to the insolubility of morphia in that menstruum. Chlorine gas was passed through the mixture, and the morphia dissolved immediately, the solution changing to an orange red color. This was evaporated spontaneously between 32 and 35° Far. When evaporated to about  $\mathfrak{z}$ ii. the solution changed to a green color, and deposited a white powder (which dissolved when the solution was placed in a warm room). When a few drops of this green solution were added to some water it produced a red colored solution. The green solution was then evaporated to dryness, and a reddish brown colored substance was left behind, which looked as if the morphia had become burnt by the action of the chlorine, but that this was not the case was proved by its being perfectly soluble in water, producing a dark transparent solution, and possessed of the characteristic bitter taste of salts of morphia.

The last experiment was repeated with nearly the same results. The solution of chlor. of morphia was evaporated spontaneously at about 60° Fah., but when evaporated to  $\mathfrak{z}$ ii. it did not change color.\*

*Philadelphia, October 26, 1855.*

\* Liebig (*Traité de Chimie Organique*, tome ii. p. 552) says that the salts of morphia put in contact with chlorine water, become first orange, afterwards red, and finally yellow, and precipitate a substance of the same color.

AN INTRODUCTION TO PRACTICAL PHARMACY, designed as a Text-book for the Student, and a guide to the Physician and Pharmacist. With many formulas and prescriptions. By EDWARD PARRISH, &c., with 234 Illustrations. Philadelphia: Blanchard & Lea.

This book was noticed briefly in the last number of this journal by the editor. We purpose, at present, to consider it somewhat more in detail, and to present such extracts from it as will show its general scope and character.

It is not based on the superstructure of any foreign publication, as has usually been the case with books, on similar subjects, issued from the American press, but is original in conception with its author, who, from his experience both as a pharmacist and as a lecturer and teacher of practical pharmacy to medical students, has become aware of the want of a text-book in this department, which he has thus endeavored to supply.



It contains instruction for the inexperienced student and apprentice, of a practical kind, commencing with the "rudiments," given in an easy conversational style, sometimes with rather an amusing degree of minuteness, (ex. gr. p. 80 on folding filters, p. 499, on powders,) exemplified with many wood cuts, of which the one annexed is a favorable specimen. The officinal preparations are arranged in groups, under the appropriate classes, in a way that effects a great saving of space, giving at the same time a clear view of their composition. To show his method of doing this, we quote the syllabus of

the medicated waters:—

#### AQUE MEDICATÆ, U. S.

FIRST CLASS.—*By trituration with an insoluble substance which is afterwards separated by filtration.*

| Officinal name.                                                  | Proportions. | Comp.                   | Dose. |
|------------------------------------------------------------------|--------------|-------------------------|-------|
| Aqua Camphoræ, Camphor ʒj, Carb. Magnes. ʒij to Oj=3 grs. to fʒj |              |                         | fʒss. |
| " Amygdalæ Amaræ, Oil ʒxvj, do.                                  |              | ʒj to Oij=1 drop to fʒj | fʒj.  |
| " Cinnamomi, Oil ʒxvj, do.                                       |              | ʒj to Oj=2 drops to fʒj | fʒij. |
| " Fœniculi, do. do.                                              |              | do. do.                 | do.   |
| " Menthæ Pip., do. do.                                           |              | do. do.                 | do.   |
| " " Virid., do. do.                                              |              | do. do.                 | do.   |

SECOND CLASS.—*By distillation.*

Aqua Rosæ, Rose petals lbj to Oj.

THIRD CLASS.—*By charging water with gas.*

Aqua Acidi Carbonici,                      5 parts of CO<sub>2</sub> to 1 of water.

The syllabi are followed by brief accounts of the processes necessary, with occasional remarks on such as seem to require explanation. After which are described the non-official preparations of the same class in greater detail, with new remedies and their combinations and numerous recipes, many of which are valuable and not readily accessible to druggists generally. Among these latter, are a number which have been hitherto confined to the establishment with which the author is connected, which are communicated with his opinion as to their merits and advantages, given with a characteristic frankness, which is refreshingly in contrast with the reserve sometimes manifested even by respectable pharmacutists as to private formulæ, the exclusive possession of which is thought to tend to their pecuniary advantage. Throughout the work, the author has interspersed various observations, suggested by the subjects under consideration, which travel occasionally out of the strict line of precedent, but are interesting, and have generally a practical bearing. As the general arrangement is described in the notice in the last number, we do not think it necessary to allude to it any further, but shall proceed to extract various matters which appear to be novel or interesting.

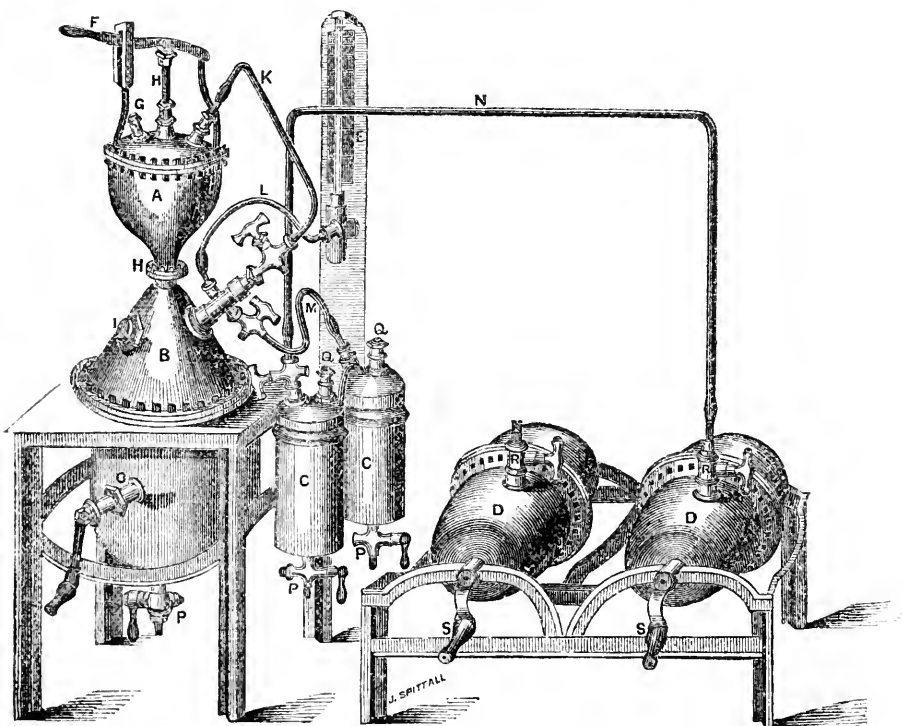
In the chapter on the collection and drying of plants, we find the following in reference to Shaker herbs:—

“The ‘United Brethren,’ called Shakers, at their settlement in New Lebanon, New York, have very extensive and convenient arrangements for drying these vegetable materials. A series of shelves of wire network is disposed in layers at suitable distances from each other, in large and well ventilated apartments; upon these the herb is carefully placed, and allowed to remain subject to the desiccating action of the air, circulating below as well as above it, until completely dried. It is then removed to a capacious bin, of which many are arranged along the sides of the room, and preserved until nearly ready for pressing—an operation which, in common with some other cultivators, the Shakers practice upon every article of the vegetable *Materia Medica* which they cultivate or vend.

This, while it has its advantages, is liable to some objections. It has been said that, owing to the moist condition to which the plants require to be brought before pressing, the packages are liable to become mouldy in the middle. I have never met with an instance of this kind, however, and have no doubt but that the excellent reputation the Shaker herbs have attained is well founded. Another objection to these herbs, of a very different charac-

ter, is, that they are not adapted to the examination of the physical characteristics of the plants; a pharmaceutical student, placed in an establishment where they are sold to the exclusion of the dried plants in bulk, enjoys no opportunity of familiarizing himself with this extensive class of medicines, at least so far as their physical and botanical characters go: to this may be added the difficulty in noticing any deficiency in quality, any intentional or accidental adulteration, or error in labelling the articles."

In the chapter on medicated waters, which we have already quoted from, is included an account of the manufacture, &c., of mineral water, with descriptions of apparatus employed. We copy the engraving of Bernhard's apparatus and fountain:—



A. Acid reservoir. B. Generator, connected with A. by glass valve H. and by the pipe K. (to equalize the pressure). C. C. Washers. D. D. Fountains. G. I. Openings to supply the acid reservoir and generator. Q. Q. R. R. Openings for supplying the washers and fountains. P. P. Openings for emptying generator and washers. E. Guage for indicating the pressure. L. M. N. Connecting pipes with stop cocks.

We omit the detailed description for want of space.

The generators and washers are copper, solidly tinned; the fountains cast iron, enamelled on the inside. The cost of the whole apparatus, Mr. Parrish states, varies according to size, &c., from \$235 to \$400. The fountains are necessarily too heavy to be readily portable, consequently the apparatus can only be used to advantage where the mineral water is made on the premises at which it is sold.

"Nichols' Patent Mineral Water Apparatus," is also figured and described. This is on a smaller scale and less costly.

We observe that the author has omitted altogether the important subject of coolers for mineral water. There is no doubt that block tin pipe, coiled in an ice box, as described in the last volume of this Journal, page 409, forms the best arrangement for this purpose which has yet been introduced, being efficient, economical and free from any danger of communicating deleterious qualities to the water.

From the chapter on "Evaporation and the Extracts," we take the following:—

*Extractum Ignatie Amaræ Alcoholicum.*

"This preparation has been proposed as a 'remedy' for dyspepsia, attended with nervous depression, and extensively advertised as such by a clergyman of Brooklyn, N. Y., who, having been cured by it, makes it known to others for the benefit of humanity. The recipe, as here given, is an improvement upon his, and is offered for the benefit of apothecaries, who may be called upon to make it.

The beans of St. Ignatius, like nux vomica, have a very horny and tough kernel (due to bassorin and fixed oil), which renders it difficult to powder them so as to extract their soluble matter. Professor Procter recommends the following process for their extraction. The beans are bruised in an iron or brass mortar, until reduced to small fragments or very coarse powder; they are then moistened with water in a covered vessel, and heated until the tissue of the pieces has become soft, and can be bruised into a pulpy mass. This is then mixed with twice its bulk of alcohol, sp. gr. .835, and allowed to macerate in a close vessel in a warm place for 24 hours, and then treated by displacement until 8 or 10 times the weight of the drug is obtained. The alcohol is then distilled off and the residue heated in a water bath until reduced to the consistence of a soft extract. By this process, about 10 per cent. of a brown colored, intensely bitter extract may be obtained. This extract is much stronger than extract of nux vomica, and is directed to be made into a mass with gum Arabic, in the proportion of 20 grains of the extract to 10 of the gum, and divided into 40 pills ( $\frac{3}{4}$  grain in a pill), one of which is to be taken three times a day.

It is scarcely necessary to remark that the free use of a medicine of such power, containing one of the most poisonous of alkaloids, as a popular remedy, to be given without the advice and care of a physician, is most dangerous and unjustifiable."

Bean of St. Ignatius afforded to Pelletier and Caventou, 1.2 per cent. of strychnia, from which the alcoholic extract would contain in the quantity directed to be taken daily ( $2\frac{1}{4}$  grs.), about  $\frac{1}{8}$  gr. of strychnia, beside the brucia which is associated with it. At the first blush, it appears to indicate an unusual amount of philanthropic liberality on the part of the "clergyman" of Brooklyn, that he should be willing to subject himself to the heavy expense of advertising this remedy extensively throughout all parts of the country, the recipe to be furnished gratuitously by mail to any applicant; but on enquiring a little more closely, we find that the 40 pills are furnished at one dollar per box, and as almost every invalid who applies for and receives the recipe, orders a box of the pills, the clergyman is probably well paid for both his benevolence and his outlay. We observe that there is now an opposition "clergyman" in New York, who supplies a recipe for similar complaints, and within a week or two another in this city has commenced advertising a remedy for rheumatism, to be sent in like manner by mail. As this method of introducing a medicine seems likely to become a favorite expedient of quackery, it is proper that it should be understood.

Under the head of "Concentrated or Resinoid Extracts," in this chapter, the author has included an account of certain preparations used by the "Eclectic" practitioners, viz: Stillingin, Leptandrin, Hydrastin, Sanguinarin, &c.



In the chapter headed "Lignin and its derivations," is a very full account of collodion, its preparation, &c. A convenient arrangement for keeping collodion ready for use, consisting of an ounce vial, with a camel's hair pencil connected with the cork, is exemplified in the figure which we copy from page 241. From this chapter we quote as follows in regard to creasote:—

"The article now generally sold as creasote, is quite different from what was formerly met with under that name. It is imported from Germany, and is much cheaper than the old kind, which came from England, and was obtained from wood tar as above. The present article, which is remarkable for readily assuming a brown color on exposure to the light and air, is chemically a hydrated oxide of phenyle, or carbolic acid,  $C_{12}H_5O$ , and is



prepared from coal tar. It has a specific gravity of 1.062, and boils at 386°. A slip of pine wood, dipped first in this and then into hydrochloric acid, becomes blue, which is not the case with the true wood tar creasote. In an article on this subject, in the *New York Journal of Pharmacy*, Oct., 1853, Professor Edward N. Kent has given a method of manufacture and purification, which has proved successful in his hands, and expresses the opinion that carbolic acid is creasote in a purer form than that obtained from wood tar. It is certainly less disagreeable for use."

From the chapter on "Farinaceous and Saccharine substances," we take the following remarks on honey, which may be new to some of our readers:—

"It may not be generally known that the honey so extensively sold in the cities in tin cans holding a quart or more, and in bottles of somewhat less capacity, by the druggists and grocers, is a factitious article made on a large scale from Havana sugar; this fact, which has only recently come to light, will surprise many who have been favorably impressed with the article as remarkably pure and agreeable honey."

The accounts of gelatine and cod-liver oil are in extenso and contain much new matter.

We extract a portion of his observations on citrate of magnesia. We understand the use of a small portion of bicarbonate of potassa in this preparation, is to be directed in the duodecimo edition of the *Pharmacopœia* shortly to be published:—

*Liquor Magnesiae Citratæ*, U. S.

"In presenting a formula for this new and very popular cathartic beverage, I shall depart from the usual custom of following the *Pharmacopœia*. It is to be regretted that, from taking the officinal directions, many pharmacutists are compelled to give up the preparation of the solution, and purchase it of other apothecaries or druggists, so that its manufacture is thrown too much into a few hands. One druggist in Philadelphia has frequently sold a gross of bottles of the citrate per day, on an average, for thirty days in succession. The recipe below is that I have used for some years; it is original with myself, and I believe never fails to furnish a satisfactory article.

|                              | To make one doz.        | To make one bottle. |
|------------------------------|-------------------------|---------------------|
| Take of Citric acid . . . .  | 9 ounces (offic.)       | 3vj.                |
| Magnesia . . . .             | 2 ounces and 5 drachms  | 3j+gr.xlv.          |
| Syrup of citric acid . . . . | 12 fluidounces          | f 3j.               |
| Water . . . .                | 1 gallon, or sufficient | f 3xss.             |

Make an acid solution of citrate of magnesia with the citric acid, magnesia, and 3 pints of the water (f 3iv in making a single bottle); to this add the lemon syrup, and divide the whole among 12 f 3xii with the re-

remainder of the water, adjust the corks, and add to each bottle about ʒj of crystallized bicarbonate of potassa.

If the magnesia is rather poorly calcined, and contains some carbonate, it may be best to increase the proportion from 105 to 110, or even 120 grains, though this must be done with great caution, as the slightest excess may occasion the precipitation of a large amount of the hydrated citrate. If the preparation is not decidedly acid, it will be disagreeable to take, and will possess no advantage over common saline cathartics, but if too strongly acid, it will be almost equally objectionable. The bicarbonate of potassa has the great advantage of neutralizing a portion of the acid, while it forms a very soluble and agreeable salt. If carbonate of magnesia were used, in the proportion of the *Pharmacopœia* formula, the tendency to deposit would be increased, which is the greatest practical difficulty with this solution."

The officinal preparation is one-fourth stronger than the solution made by the above formula.

We copy from the chapter on "Opium," the following characteristic remarks on the abuse of this potent drug:—

*"The Abuse of Opium.*—The habitual use of the preparations of opium as a means of intoxication, is an evil, the extent of which is scarcely appreciated by the profession, or by the community at large. There are shops in the outskirts of our large cities in which the sale of landanum forms one of the principal items of business. These peddle it out to every poor victim, who can produce a few pennies to purchase a temporary relief from imaginary pains. So common is this article of trade, that even little children are furnished with it, on application, as if it were the most harmless drug. It is sold in these shops at half the price maintained by respectable establishments, and there can be no doubt that its intoxicating effects are sought by many, who use it as a substitute for alcoholic drinks. Individuals who would shrink from the habitual use of spirituous liquors, employ this *medicine*, under a false persuasion that it is useful or necessary to allay some symptom of a chronic disease, until they become victims to one of the worst of habits. There is scarcely an apothecary in our large cities who cannot relate instances of opium intoxication that have come under his own notice, and been served at his own counter. Females afflicted with chronic disease; widows bereft of their earthly support; inebriates who have abandoned the bottle; lovers disappointed in their hopes; flee to this powerful drug, either in its crude form, in the form of tincture, or some of its salts, to relieve their pain of body or mind, or to take the place of another repudiated stimulant. Such, too, is the morbid taste of these, that they think they require the soporific influence of opium to fill up the measure of their life enjoyment, just as the drunkard is wedded to his cups, or the tobacco-user to the weed.

The prevalence of this kind of indulgence is liable to increase in proportion as legal restrictions are placed upon the sale of alcoholic stimulants.

By the so-called liquor laws, the sale of spirituous liquors is also thrown into the hands of the druggist and apothecary ; with him rests in a great measure the necessary discrimination as to the sale of these powerful agents : he must endeavor to draw a line between the purchaser who seeks them for an undue indulgence in their intoxicating effects, and one who will apply them to legitimate uses in disease. That this is a difficult duty cannot be denied, and its observance implies the exercise of great care and tact, as well as of moral courage.”

We shall finish our extracts by presenting some recipes, taken from various parts of the book.

*The Compound Fluid Extract of Buchu.*

|                                |                         |
|--------------------------------|-------------------------|
| Take of Buchu in coarse powder | 12 ounces.              |
| Alcohol . . . . .              | 3 pints.                |
| Water . . . . .                | 6 pints, or sufficient. |

Treat the leaves by maceration and displacement, first with a portion of the alcohol, and then with the remainder mixed with the water ; evaporate the resulting liquid by a gentle heat to 3 pints, and to this add,

|                 |            |
|-----------------|------------|
| Sugar . . . . . | 2½ pounds. |
|-----------------|------------|

Continue the heat till it is dissolved, and, after removing from the fire, add—

|                                   |                     |
|-----------------------------------|---------------------|
| Oil of cubebs,                    |                     |
| Oil of juniper, of each . . . . . | one fluidrachm.     |
| Spirit of nitric ether . . . . .  | twelve fluidounces. |

Previously mixed ; stir the whole together.

*Marshmallow Paste. Opaque Gum Paste. Pate de Guimaure.*

|                               |             |
|-------------------------------|-------------|
| Take of Gum Arabic, (white,)  |             |
| Sugar, of each . . . . .      | lbj.        |
| Water . . . . .               | sufficient. |
| Orange-flower water . . . . . | f ̄ijj.     |
| White of eggs . . . . .       | No. x.      |

Bruise the gum, dissolve it in the water, and strain ; put the gummy solution upon the fire in a deep, wide pan, add the sugar, stirring continually until it has the consistence of thick honey, carefully regulating the temperature. Then beat the eggs to a froth, add them and the orange-flower water gradually to the paste, which must be continually stirred ; continue to beat the paste until, in applying it with the spatula upon the back of the hand, it does not adhere to it, then run it out upon a slab, or into pans covered with starch.

Formerly this contained marshmallow ; now it is, properly speaking, only an opaque paste of gum.

The *Iceland moss paste*, so extensively advertised of latter years, may be closely imitated by this process, slightly varying the flavor. The asserted presence of *Iceland moss* in it improves it only in name,

*Medicated Secrets, or Cough Candy.*

To ten pounds of melted candy, add the following mixture, and divide into secrets:—

|                                                   |         |
|---------------------------------------------------|---------|
| Take of Tincture of squill . . . . .              | f ℥iv.  |
| Camphorated tincture of opium } of each . . . . . | f ℥ss.  |
| Tincture of Tolu . . . . .                        |         |
| Wine of ipecacuanha . . . . .                     | f ℥j.   |
| Oil of gaultheria . . . . .                       | ℥ viij. |
| “ sassafras . . . . .                             | ℥ vj.   |
| “ aniseed . . . . .                               | ℥ iij.  |

Used *ad libitum* in ordinary coughs.

*A New Remedy in Hemorrhages.*

|                                   |       |
|-----------------------------------|-------|
| Take of Oil of erigeron . . . . . | f ℥j. |
| Sugar . . . . .                   | ℥ij.  |
| Gum Arabic . . . . .              | ℥j.   |

Triturate the oil with the gum and sugar into a dry powder, then add—

|                 |               |
|-----------------|---------------|
| Water . . . . . | f ℥ij, f ℥vj. |
|-----------------|---------------|

*Sig.*—Take a tablespoonful three times a day.

Dr. E. Wilson and others have had considerable success in the treatment of uterine hemorrhages with the oil of erigeron, in the doses here prescribed; each f ℥ contains gtt. v of the oil.

*Tinctura Cinchonæ et Quassie Composita.—Tonic Tincture.*

Take of Cinchona, in coarse powder,

|                              |      |
|------------------------------|------|
| Quassia, “                   |      |
| Colombo, “                   |      |
| Gentian, “                   |      |
| Serpentaria, “               |      |
| Chamomile, of each . . . . . | ℥ss. |
| French brandy . . . . .      | ℔ij. |

Macerate 14 days, and extract by displacement. A very valuable combination of bitters, which, by the absence of the disagreeable resinous coloring matter of saunders, and by the employment of an acceptable form of alcohol as the menstruum, is adapted to supersede Huxham's tincture of bark. Dose, f j to f ℥ss.

*A good Preparation of Iron and Cinchona.*

(SUBSTITUTE FOR TINCTURA CINCHONÆ FERRATA.)

|                                             |         |
|---------------------------------------------|---------|
| <b>R.</b> —Tinct. cinchon. comp.* . . . . . | f ℥iv.  |
| Ferri citratis . . . . .                    | ℥j.     |
| Acidi citrici . . . . .                     | gr. xv. |

Triturate the citric acid and citrate of iron together, and dissolve in the

\* Tinct. cinchonæ et quassie comp makes a better preparation, and scarcely precipitates at all.

tincture of cinchona. Liq. ferri citratis fʒj may be used as a substitute for the rather insoluble salt. The dose is a teaspoonful, containing two grains of citrate of iron.

The citric acid breaks up any tannate of iron as soon as formed, and it is reproduced on the addition of an alkali. There is a liability to considerable precipitate of cinchonic red, but very little iron is thrown down.

*"Chloroform Paregoric" of Dr. Henry Hartshorne.*

Take of Chloroform,

Tincture of opium,

" of camphor,

Arom. spt. of ammonia, of each . . . fʒiss.

Oil of cinnamon . . . . . gtt. iij.

Brandy . . . . . fʒij.

Dose, fʒss, or less in spasmodic affections of the stomach, cholera, &c. Several practitioners have used this preparation with favorable results in severe cases.

*Effervescing Fever Powders.*

Take of Citric acid, dried and powdered, ʒv.

Divide into twelve parts wrapped in white writing paper.

Take Bicarbonate of potassa, dried and powdered, ʒviss.

Divide into twelve parts, wrapped in blue paper.

Inclose these white and blue powders alternately in a tin box.

*Directions.*—Dissolve the contents of a white paper in a tumbler, one-third full of cold water, then stir in the contents of a blue paper and drink immediately.

A dose is usually given every two or three hours, during the prevalence of the fever.

*Spice Plaster. (Dr. Parrish, Sen.)*

Take of Powd. capsicum,

" cinnamon,

" cloves, each . . . . . 2 ounces.

Rye meal,

Spirits,

Honey, of each . . . . . sufficient.

To be made into a cataplasm by trituration on a plate, and spreading upon a close fabric. It should be made up when required.

*Aconitia Ointment.*

Take of Aconitia . . . . . gr. xvj.

Olive oil . . . . . ʒss.

Triturate together, and then incorporate with

Lard . . . . . ʒj.

A good substitute for this, which is a very expensive preparation, will be found among the liniments.

The formula for the liniment alluded to, will be found in a previous number of this Journal.\*

Mr. Parrish has added, in the form of an appendix, a series of lists of medicines and apparatus, suitable for the outfit of a physician commencing practice, and also an interesting catalogue of plants growing in the immediate vicinity of Philadelphia, formulæ for the preparation of dietetic articles for invalids, &c.

We have looked over the volume pretty carefully, without observing any textual errors in the formulæ, and the few we have noticed in the body of the work are unimportant. The endeavor to embrace so much of the extensive range of matters, suggested by the plan of the book, gives it occasionally a somewhat heterogeneous aspect. In this respect, however, as in others, it represents, not unfairly, the present state of American pharmacy. In the remarks of the author on his favorite topics, there is, at times, a tendency to diffuseness, and there are occasional repetitions in the earlier chapters, which we think might have been avoided.

We have endeavored as fully as the limited space allotted us permitted, to give a fair view of the book, unbiased by feelings resulting from frequent personal intercourse with its author, or by respect for the honored name which he inherits; we are conscious, however, that we have been able to convey but an inadequate idea of its substantial practical value to all who are engaged in pharmaceutical pursuits. In conclusion, we will only add, that it is worth much more than its cost to every apothecary for his own use, and will prove also, a highly interesting and instructive work to place in the hands of his assistants. A. S.

\* We have prepared an Aconite Ointment, which appears to be an efficient preparation, as follows:—

|                                       |   |   |        |
|---------------------------------------|---|---|--------|
| Take of strong tinct. of Aconite root | - | - | f 3ij. |
| Simple ointment                       | - | - | 3j.    |

Evaporate the tincture, by a gentle heat, to a soft extract, and incorporate with the ointment. A. S.

## EXTRACTUM PRUNI VIRGINIANÆ FLUIDUM.

By WILLIAM PROCTER, JR.

Wild cherry bark is a favorite remedy with American physicians, and is equally popular in domestic practice. It was, for a long time, prepared pharmaceutically only in the form of infusion with cold water,  $\mathfrak{zss}$  to  $\mathcal{Oj}$ . The necessity of having daily to prepare the infusion, lead Joseph C. Turnpenny and myself, in 1842, (see vol. xiv. p. 17, of this Journal,) to propose a syrup made by maceration and percolation, of the strength of one part of bark in six of syrup. This preparation met the favorable opinion of both physicians and apothecaries, was adopted into the Pharmacopœia of 1850, and continues in use. But the large portion of sugar it contains renders its continued use as a sedative tonic, by some patients, attended with gastric derangement, to overcome which difficulty several preparations, under the name of "wine of wild cherry," have been introduced by B. J. Crew, and others, which appear to be concentrated cold aqueous infusions, to which sufficient alcohol has been added to preserve them, say 20 per cent. When used merely as a tonic, this addition may be unobjectionable or even, in some cases, advantageous, but where the sedative properties of the drug are sought, the addition of alcohol, in any form, is directly antagonistic in its effects to those of hydrocyanic acid, and consequently ineligible as an associated ingredient. In the preparation now offered to the medical profession, the use of alcohol is avoided altogether, and in lieu of cane sugar, sugar of milk has been substituted as the preservative agent, which not only avoids the cloying effects of the former, but is itself specially recommended as a dietetic agent in pulmonic diseases. Further, the strength of the preparation is much greater than any heretofore offered, and the process is such that, if practically carried out, the whole of the sedative and tonic virtue of the bark will be represented, whilst a portion of the tannic astringency, (the continued action of which causes costiveness,) is removed in course of preparation. The strength of the fluid extract is such that a teaspoonful (f.ʒj) faithfully represents thirty grains of the bark, which is equal to two fluid ounces of the infusion, or a table spoonful of the syrup. Sugar of milk is less sweet, and much less soluble in water, than

cane sugar, requiring six parts of that liquid to dissolve it, hence each dose contains less than ten grains of the sugar. It does not undergo the vinous fermentation until converted into grape sugar, and any tendency to enter the lactic fermentation is controlled by the hydrocyanic acid present.

In making this fluid extract, advantage is taken of the fact that alcohol will extract the amygdalin (the source of the hydrocyanic acid) from the bark without touching the agent which effects its decomposition in the presence of water, and, at the same time, removes the tannin, and the bitter principle on which its tonic power mainly depends. To insure the subsequent decomposition of the amygdalin, resort is had to the emulsin of sweet almonds, which, owing to its solubility in water, is much more manageable than the insoluble bark residue. The following is the formula :—

*Fluid Extract of Wild Cherry Bark.*

|                                       |            |         |
|---------------------------------------|------------|---------|
| Take of Wild Cherry bark, in powder,  | 24 ounces. | (Troy.) |
| Sweet almonds                         | 3          | “ “     |
| Lactine, or sugar of milk, in powder, | 8          | “ “     |
| Alcohol, (88 per cent.)               |            |         |
| Water, each a sufficient quantity.    |            |         |

Macerate the wild cherry bark in a pint and a half of alcohol for eight hours, introduce it into a percolator and gradually pour on alcohol, until five pints of tincture have passed, observing to regulate the passage of the liquid by a cork or stop cock. Introduce the tincture into a capsule (or distillatory apparatus if the alcohol is to be regained), and evaporate it to a syrupy consistence, add half a pint of water, and again evaporate until the alcohol is entirely removed. Beat the almonds, without blanching, into a smooth paste with a little of the water, and then add sufficient to make the mixture measure two pints; add this to the solution of the bark, and introduce the mixture into a quart bottle, cork it, and allow it to stand twenty-four hours, with occasional agitation; then quickly express in a close cloth, and filter into a bottle containing the lactine in powder. Then wash the dregs with more water, until sufficient has passed to make the filtered liquid and sugar measure three pints; lastly, dissolve the latter by agitation or a gentle heat, and preserve the extract in closely stopped bottles.



Thus made, fluid extract of wild cherry bark is a dark, wine-red, transparent liquid, not syrupy in consistence, and possessed of a bitter, hydrocyanic taste. None of the oil of the almonds is retained, and probably very little if any of the emulsin, as it may be freely mixed with alcohol without precipitation.

As it is not certain that the preparation made with lactine will keep even with the assistance of the hydrocyanic acid, it is thought best to give another formula in which ordinary sugar is the preservative agent should it not prove sufficiently permanent.

The extract may be made with sugar, so as to have the consistence of the ordinary syrup, and the same strength as the above, by using but one pint of water for the almond emulsion, and stopping the washing of the dregs when a pint and a half of liquid has passed the filter, and dissolving in it three and a half pounds (troy,) of sugar. Made with sugar, the great bitterness of the preparation is masked by that substance, and it is more palatable than that made with sugar of milk. When the tonic properties of the drug are mainly sought, an admirable *wine of wild cherry bark* may be obtained by substituting half a pint of deodorized alcohol (88°) for the sugar of milk in the first formula.

Should it be desirable, the preparation may be made of double the strength indicated above, by using half the above proportion of water in making the almond emulsion, and half the amount of milk sugar, so that the whole shall measure a pint and a half, yet it is believed that the strength adopted above is fully adequate to the wants of the physician, the thorough decomposition of the amygdaline is rendered more certain by the larger proportion of water, which also more effectually retains the volatile oil in solution. When the almond emulsion is added to the solution of extract of cherry bark, a coagulation occurs from the formation of an albuminous tannate, and probably a portion of the tannin is removed from solution, yet this reaction while it does not prevent the agency of the emulsin in decomposing the amygdalin, and in no wise effects the bitter tonic principle, makes the preparation less astringent, and less liable to produce costiveness by continued use. If it should be desirable to make a preparation free from astringency, it can be readily accomplished by macerating in the aqueous solution of the alcoholic extract of the bark some strips of isinglass, previously softened in water, which will remove the tannin.

## ON THE FALSIFICATION OF STRYCHNIA WITH OXALIC ACID.

The following letters, which have been placed at our disposal by Messrs. Powers & Weightman, exhibit one of the most bare-faced frauds that has come to our notice. They are published for the benefit of those who have not yet been victimized. They may be of service to others who are in the habit of buying drugs from a species of irresponsible drug peddlers, who, though frequently knaves themselves, are more often the tools of greater knaves behind the screen. Drugs should never be bought from irresponsible parties, especially such drugs as are not at once recognizable by their appearance; and where, as is sometimes the case, drugs and chemicals are purchased at auction for what they will bring, and without being warranted, the druggist should always closely examine them, as *he* alone is responsible for their quality if they are afterwards sold.—EDITOR AM. JOURN. PHARM.

*Cincinnati, Dec. 6th, 1855.*

Messrs. Powers & Weightman, Philadelphia.

GENTLEMEN: I was handed this morning, by one of our retail druggists, a specimen of strychnia in crystals, which he purchased from one of our wholesale houses, for examination. It was put up in oval bottles, and labeled similar to yours, sealed with black wax, and stamped F. P. & W., and was sold as your manufacture.

I tested it for strychnia with chrom. potassa and sulph. acid; it gave no characteristic tint of the presence of strychnia; the crystals tasted acid, and in appearance resembled oxalic acid. I placed some of them in a test tube, and poured some water upon them; they dissolved immediately; in the solution chlor. calcium immediately caused a dense white precipitate, oxalate of lime, showing conclusively that the specimen, from its taste, solubility in water, and reaction with a lime salt, was only oxalic acid. I have a specimen of the same in my possession, which is at your disposal. This is the most outrageous fraud that has come under my observation for some time, and I think that you ought to take or make notice of it through the Journal of Pharmacy.

Yours, Respectfully,

E. S. WAYNE.

P. S. I have every reason to suppose that the specimen was put up in Philadelphia.

E. S. W.

—  
*Cincinnati, Dec. 10th, 1855.*

Messrs. Powers & Weightman.

GENTLEMEN: We sent you a small box, a few days since, by express, containing some vials filled with oxalic acid, labelled strychnine, and your

seal or stamp on the bottles, counterfeited. Some four weeks ago, a very genteel young fellow, in appearance, called in the store, stating that he was from Philadelphia, and it was his intention, when leaving Philadelphia, to go to Arkansas, and that a druggist in Arkansas had written him to bring him 20 oz. of the above article, (the article is used largely there,) showing us some vials of genuine at the time, but, on his arriving here, he had changed his mind, and would not go, and there being no chance of sending the article, he would dispose of it at a little less than cost; he named his figures, about 15 per cent. less than your price; we bought it, and on examination of another package, we found the vials to contain what these do sent you. We had, however, sold a few vials, one of which was returned, saying it was not good, and to give him Rosengarten & Son's. We make this explanation that you may caution your customers, if you think best to be on the alert for him.

Yours, very respectfully,

J. & C. REAKIRT.

## PHYSICIANS AND PHARMACEUTISTS, AND THEIR RELATIONS.

By J. M. MAISCH.

It was about a year ago, that, to a Philadelphia Sunday paper, the question was put, whether apothecaries were to be regarded as professional men or as tradesmen? To which that journal unhesitatingly replied, tradesmen. We must confess that we were, and still are dissatisfied with such an answer; opinions like this, promulgated by the press, cannot fail to injure the science of pharmacy, at least to do injustice to the true and faithful pharmacist. Druggists, properly so called, that is, dealers in drugs, certainly are tradesmen, inasmuch as their business consists chiefly in buying and selling, some manufacturing included. The *wholesale druggist* is a merchant, who has to study the influence of political and natural events on the market, the facility of procuring his merchandise, the time and manner to get it off again; he has to study the proper mode of preserving drugs in an unaltered condition, or sometimes to turn them profitably into pharmaceutical or technical preparations; in a word, the *wholesale druggist* is a merchant, whose success, like that of other merchants, depends chiefly, if not entirely, on the quantity and quality of his commercial knowledge and virtues.

Vastly different from him is the apothecary, who, of course, if he does not mean anything else but a *retail druggist*, as he styles

himself, is a small tradesman, a shop keeper, who, instead of buying coffee by the sack and sugar by the barrel, and retailing it by the pound or half-pound as required, buys epsom salts by the quarter hundred weight, and senna by the five pounds, and retails them out by three or six cents worth; or he understands to buy a dozen of patent medicines, selling them from the six-penny candy stick to the \$1 50 cholagogue or \$3 00 catholicon; and if he chances to know that magnesia may be obtained from epsom salts and that opium contains morphia, he will call himself a *chemist*, and if he knows how to mix rhubarb and magnesia, or how to dissolve tartar emetic in water, he thinks himself justified to affix to his title *apothecary*. Alas! there is more truth in these remarks than we would wish to believe. We have heard of a Rev. gentleman, who never before had mortar and pestle in his hand; of a boarding house keeper, who well knew how to treat his boarders, but never had any idea of what a tincture was, both buying drug stores in two large cities; one, however, soon found out that it "would not do," and conscientiously returned to the pulpit; the other one still holds out, doing a good business in nostrums of all sorts, having established the "principal depot" for some of them with his drug shop, where, sad to say, a half a dozen of prescriptions weekly find their way. We know a retail druggist, the owner of a fashionable store, who would not prepare Zittman's decoction in a metallic vessel, because he was afraid the "acid of the mercury would eat up the metal of the vessel." It will be remembered that during the boiling down of this preparation, calomel, enclosed in a bag, is suspended in the liquid.

These and other instances we know to be true; but what do they prove? They simply prove that there are a number of tradesmen or shopkeepers among the "retail druggists," who regard the vocation of the apothecary as a gold-mine to be explored by any one who feels inclined to do it, without reference to pharmaceutical knowledge or ignorance. Fortunately, however, a number of pharmacutists know the duties and requisites necessary for them to come up to the demands of the science of modern pharmacy, and a science it has become now, especially since chemistry has been elevated really to a science, with sound foundations, and has commenced its researches with the matter of

the terrestrial bodies ; pharmacy working with such, could not be placed out of its reach, and under the influence of chemistry it was to be built up to a science itself.

Some have spent a lifetime faithfully trying to keep pace with the rapid progress of pharmacy and its appertaining sciences, and—we know such cases—have not been able to reap the fruit of a quarter century's labor and research ; while others, who never had an idea of what pharmacy is, set up a “drug shop,” being contented to make money by retailing nostrums, and attempting even to cure, “on the most scientific principles,” after having read that a proper dose of rhubarb operates on the bowels, and that corrosive sublimate and other mercurials are sometimes given in venereal diseases, and they do not stop to reflect how many lives are probably dependent daily on their ignorance or unscrupulousness. Might it not be well for such persons to try, by close study and practical exercises, to gather at least some necessary pharmaceutical knowledge ? And surely it would not be too late ; with a firm determination a man might accomplish it.

We have read in a history of the apothecaries, by A. Phillipe, that about the beginning of the fifth century, the preparers of medicine separated from the physicians as a different class, but were scorned, being regarded as higgglers. Could it be otherwise now, in the face of the numerous abuses perpetrated on science and the public, if pharmacy had not obtained a higher degree corresponding with the actual progress of the natural sciences ?

But how guard against, how remedy such evils ?

In most parts of Europe, a strong restriction exists, in the conducting of the apothecary business, a heavy license being imposed on it, a tradition from the middle ages. But what secures there to the pharmacist high respect is, the necessity of a professional education, of a thorough acquaintance with theoretical and practical pharmacy, of passing stringent examinations, previous to being recognized as such, and their own zeal for scientific researches. Such is not the case here. The exercise of pharmacy is not restricted by law ; it is *legally* considered a trade, and it depends on pharmacutists themselves, on the physicians, and also in a great measure on the public in general, to make pharmacy what it might be ; on the public and the

physician, in as much as they need not entrust the life of the patient to a man in whose skill, knowledge and experience they cannot bestow the necessary confidence; and on the pharmacutists, who ought to turn their eyes to a proper education, and allow their apprentices the time and means required for obtaining a complete knowledge of all that belongs to pharmacy, and who among themselves ought to cultivate a collegial feeling, forming pharmaceutical associations for a mutual exchange of opinions and observations, and for not being left behind the times, behind the steps of the natural sciences which, in this century, progress so rapidly.

An elaborately written paper, by Mr. Parrish, on "pharmaceutical education," was published some time since in this Journal, and it claims the attention of every pharmacist. The noble objects of the "American Pharmaceutical Association" should not be ignored by any one who does or intends to stand on a level with those acquirements that may be properly demanded of a real apothecary. Well educated men, thoroughly acquainted and conversant with all that appertains to pharmacy, cannot fail but to win the entire confidence of the public, and to convince the conscientious observer, that apothecaries are something else besides merely tradesmen, and that *pharmacy is an art and a science*.

(To be continued.)

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#### OLEUM MORRHUÆ CUM QUINIA.

To the Editors of the Medical Chronicle.

GENTLEMEN: As the above preparation has attracted some attention in England, and is frequently prescribed by medical men here, it may not be uninteresting to some of your readers if we describe the process we have found, after some experience, to be most successful.

A short notice of this article appears in the London *Pharmaceutical Journal* of March, 1855, which, however, furnishes no exact formula for its preparation, and merely states that it is a solution of anhydrous quinia in cod-liver oil, prepared by adding the former in fine powder to the oil contained in a suitable glass vessel, and effecting the solution by heating in a water-bath. We have observed, that by the continued application of heat, a

very unpleasant flavor is communicated to the oil; so much so, as to form a serious objection to its use, and have endeavored to avoid this difficulty in the following manner: We dissolve the quinia in a small quantity of strong alcohol, of sp gr. 0.796, and find that when this solution is mixed with the oil and gently heated in a water-bath, the quinia is dissolved without difficulty, as the alcohol evaporates. By this simple method, a perfectly clear liquid is obtained free from the strong flavor imparted by the ordinary process.

The following is the formula we have employed, obtaining anhydrous quinia:—

Quiniæ Disulph.,            ̄i.  
Aq. Ferventia destill., Oij.

Dissolve the quiniæ sulph. in the boiling distilled water, then add liq. ammoniæ in slight excess, and collect and carefully wash the precipitated quinia. This should be dried on filtering paper, and fused in a porcelain dish, in a sand-bath. Thus obtained, it presents the appearance of resin, being of a dark brown color, translucent and soluble in almost any proportion in fixed oils. We have generally made our solution of the strength of two grains of quinia to one ounce of cod-liver oil, but this may of course be varied to suit the pleasure of the prescriber.

A solution of caustic soda might be substituted with some advantage for liq. ammoniæ, as quinia is slightly soluble in excess of the latter, causing a slight loss, which may be avoided by using the former precipitant.

We remain, Gentlemen, yours truly,  
S. J. LYMAN & Co.

*Place d'Armes, Montreal, July 31st, 1855.*

*Pharm. Journ., Nov., 1855.*

#### ON THE ADULTERATION OF FOOD AND DRUGS IN ENGLAND.

In July last, a Committee of the House of Commons was in session, "to investigate the subject of the Adulteration of Food and Drugs." The appointment of this committee appears to have grown out of the publication in the "Lancet," of a series of reports on the above subject, under the name of "*The Analytical Sanitary Committee.*" The investigations were chiefly microscopic in their character, but to a certain extent chemical, and

Dr. Hassall, who got the credit of being the chief of the "Commission," professed extraordinary accuracy in determining admixtures of organic matter with the microscope, whilst Dr. Normandy took charge of the chemical essays. According to the *Pharmaceutical Journal*, both of these gentlemen appear to have been carried away with the idea that pure food and drugs were exceptions, and that adulteration was the rule, and that many of the statements published, give impressions to the public mind very far from the truth. "Dr. Hassall deserves credit for the industry and perseverance with which he has pursued his experiments on adulterations. His weak point, however, is the endeavor to prove too much, and the habit in highly-colored statements *ad captandum vulgus*. The impression of any impartial person, on reading Dr. Hassall's evidence, would be, that the only place in which genuine medicines can be obtained, is Apothecaries' Hall." As there are two sides to every question, so of this, and in the voluminous published evidence, the statements of Hassall, Normandy, and others, are much modified by that of sound practical men, who turn the focus of their inquiries on the market in general, and not in insulated instances of fraud. With these preliminary remarks, we will proceed to extract some items from the pages of the published evidence.—ED. AM. JOURN. PHARM.

"Dr. Hassall stated that he had paid great attention to the subject, and was of opinion that adulteration prevailed in nearly all articles, whether food, drink, or drugs. There were few exceptions. The majority of these adulterations consisted of the addition of articles of greatly inferior value, for the purpose of imparting taste, pungency, or smell. He proposed to treat the subject under three heads: first, as regarded the extent of the practice; secondly, the sanitary bearings of the question; and, thirdly, to show the importance of the microscope for discovering the adulterations, and suggesting such remedies as occurred to him. He would proceed to read to the Committee a list, first, of the various substances ascertained by himself to be employed in adulteration; secondly, a list of articles ascertained by others to be so employed; and then a list of other substances supposed to be used, but of which no positive evidence had been obtained. Among the various articles to be enumerated under the first head was anatto, which was adulterated with chalk, wheat flour, rye



flour, salt, soap, turmeric, ferruginous earths, Venetian red, and red lead. Arrowroot, both East and West India, with sago, tapioca, and various mixtures and combinations of these. Anchovies, by Dutch, French, and Sicilian fish, colored by bole-Armenian and Venetian red. Bread, with mashed potatoes, alum, and various other articles. Coffee, with chicory, roasted wheat, rye, and bad flour and bones. Chicory itself with the same substances, with the addition of Venetian red, umber, &c. Curry powder, with ground rice, red lead, &c. Gin, with water, sugar, cayenne, &c. Mustard, with wheat flour, turmeric, &c. Preserves, with salts of copper (chiefly the acetate,) ground rice, &c. Vinegar, with water and sulphuric acid. Scammony, with wheat flour, chalk, &c."

"Annatto is a coloring substance, and is used largely in dyeing and coloring cheese and milk, butter and cream; it is largely imported, and is a very expensive article. From samples of it, chalk was present in twenty-one, wheat flour in four, rye in nine, salt in nineteen, and an oily substance (probably soap) in seven.

"In twenty-three samples of opium, no less than nineteen were adulterated, chiefly with wheat flour and poppy capsules, while the active principle of the opium was only present in the proportion of one to five. Opium was one of the most important drugs, especially in cholera cases and *delirium tremens*, and it was essential in such cases it should be good. The drugs retailed at Apothecaries' Hall might be taken to be genuine. He had examined four or five samples, and had never met with an adulterated article.

With regard to the adulteration of drugs, it does not often come under the notice of Apothecaries' Hall. They buy in the market the best that can be procured, and although there may be adulteration to a certain extent—which is the case with almost every article—yet the public may be certain of obtaining the purest the market offers. As to opium, none is imported pure. The juices obtained from the poppy will never dry beyond a certain consistence; some leaves of other plants are therefore added to bring it into a cohesive state—this is adulteration in one sense. Everything brought at the "Hall" is tested.

In answer to a question as to whether the variation in the quality of opium might not seriously affect the prescriptions in which it

was an ingredient, the witness said he thought there could be no danger of this, as the average quality was well known. He further stated that all samples of drugs were examined by a committee. Were obliged to grind their own drugs, in consequence of the drug grinders adulterating them during the operation. Was not aware of the composition of the substance called "powder of post." The College of Physicians have power to examine and inspect all chemists and druggists' shops, and this power is exercised once a year; but the examination is very cursory, and not sufficiently accurate to be of any benefit. There is an agreement between the Admiralty and the Apothecaries' Society, by which they may examine their establishment at any time, but this power has not been exercised. The Hall supplies the whole of the navy, and half the army, and the East India Company. Believes Messrs. Savory have the other half.

With regard to Turkey rhubarb, knew that one manufactory at Banbury produced twenty tons per annum. It is very inferior to Turkey, fetching about 4*d.* per lb., while Russia rhubarb is worth 11*s.* 6*d.* Russian rhubarb comes from the Tartar districts, and is monopolized by the Russian Government. It is brought to St. Petersburg by the caravans, and thence exported. It is a great delusion to believe that rhubarb comes from Turkey. The China rhubarb, commonly called the Turkey, is worth about 7*s.* 6*d.* per lb. At the present time the price is very high indeed. Many chemists profess to obtain their drugs from Apothecaries' Hall, but it is not the fact. The Hall does not supply more than seven or eight.

Cod-liver oil is another drug in which there is an immense adulteration. The oil to be obtained at the Hall is from Newfoundland. In the case of the oil being colored, it is owing to the liver of the fish being allowed to putrify. This case of adulteration is most difficult to detect, even to an experienced person. There are certain tests published, but the presence of even 5 per cent. only of the pure oil will yield the required result.

Several specimens of mustard have passed through witness's hands, all greatly adulterated, containing from 27 to 30 per cent. of inorganic matter, such as sulphate of lime. The genuine should give only 4½ to 6½ per cent.—*Pharm. Journ.* Aug. 1, 1855.

(To be continued.)

ON A PROCESS FOR OBTAINING AND PURIFYING GLYCERINE,  
AND ON SOME OF ITS APPLICATIONS.

By MR. G. F. WILSON.

The paper I was asked to give was one on our new process of obtaining and of purifying glycerine. I trust, however, you will excuse, as an introduction, a short sketch of the past history of glycerine and its uses, though it will take us over some ground well known to most members present.

Glycerine was discovered in 1789, by Scheele, as a product in the process of lead plaster making, and was called by him the sweet principle of oils. About twenty-five years afterwards it was studied by the father of fatty chemistry, Chevreul, and shown by him to be the base of fats and fat oils. M. Chevreul lately received a specimen of glycerine obtained by our new process, with expressions of extreme pleasure. Nearly half a century has passed since the earliest of those beautiful researches into the constitution of fatty bodies, in the course of which he discovered the function of glycerine, yet our specimen found him still lecturing to his class.

A source of impure glycerine has long existed in the preparation of lead plaster, in which the combination of the litharge with the acids of the olive oil sets the glycerine free; another source in soap-making, the soda or potash setting free the glycerine; and a third source in the stearic candle manufacture, where the lime saponification separates the glycerine. Most of the purifiers of glycerine appear to have preferred this last source.

Notwithstanding the known existence of these great sources of impure glycerine, it was long before glycerine was in any way utilized: hundreds of tons have been and are yearly thrown away.

The first suggestion of a use which we can trace, dates in the beginning of 1844, when Mr. Thomas Dela Roche, being engaged on some experiments requiring the use of syrupy substances, procured some glycerine from Mr. Warrington of Apothecaries' Hall, some of which he applied to a burn and an irritation of the skin. The experience thus obtained of its properties of soothing and keeping moist, led to its introduction, through Mr.

Startin, into the Hospital for Skin Diseases, where it soon came into extensive use.

In 1846, Mr. Warington took out a patent for the use of glycerine as an agent in preserving animal and vegetable substances, and tried many experiments on preserving meat. He informs me that part of a neck of mutton preserved in glycerine for several months, when cooked by Soyer, was partaken of by a gentleman with great satisfaction.

Mr. Warington, I believe, first applied glycerine in mounting objects for the microscope, for which it has proved so successful.

In the *Lancet* of June, 1849, Mr. Thomas Wakley published the result of a year's experience in a long and very interesting paper on the use of glycerine in diseases of the ear, giving a number of cases in which it had proved a cure for deafness. In the number of the 23d of the same month his results were confirmed by letters from Mr. Erasmus Wilson and Dr. Gardner, the latter of whom drew attention to the fact that glycerine should be free, not only from any trace of lead, but also as much as possible from water. His theory was, however, better than his practice; for the glycerine he speaks of using, sp. gr. 1.280, being above the density of anhydrous glycerine, must have been impure.

Isolated applications of glycerine had thus been suggested; but M. Cap appears to have been the first to see its extraordinary value in a great variety of medicinal preparations. His very valuable and interesting papers were published in the *Journal de Pharmacie et de Chimie*, and translated into the *Chemist*. I shall give two short extracts from them.

M. Cap, in his first paper, (*Journal de Pharmacie et de Chimie*, February, 1854, *Chemist*, April, 1854,) begins by attacking the process of purifying glycerine given in the French chemical books, and shows its defects. He then gives his own process, remarks upon the great value of glycerine in skin diseases, and after suggesting a number of valuable uses, proceeds as follows:—

“Glycerine dissolves the vegetable acids, the deliquescent salts, the sulphates of potassa, soda, and copper, the nitrates of potassa and silver, the alkaline chlorides, potassa, soda, baryta, strontia, bromine, iodine, and even oxide of lead. It dissolves

or suspends the vegetable alkaloids in the same manner as the aqueous liquids, and at the same time the resulting products may be used for the same purposes as though mixed with oil. Thus, the salts of morphia dissolve in it completely, even cold, in all when hot, but when cold, separates into clots, which when triturated with the supernatant liquid, give it the consistence of a cerate very useful for frictions and embrocations. It is the same with the salts of brucine, strychnine, veratrine, and most preparations of the same order, which enables us to consider that we have now, if not medicinal oils with a vegetable alkaloid base, at least a series of new preparations which will fulfil a perfectly analogous use in therapeutics."

M. Cap, in his second paper (*Chemist*, Oct., 1854), states that he employed glycerine of 28 Beaumé, or containing 88 per cent. of anhydrous glycerine, and speaks of it as a solvent of sulphuret of potassium, and sulphuret of lime, of iodine, iodide of sulphur, iodide of potassium, iodide of mercury, of some chlorides, and of quinine, and sulphate of quinine.

In the *Chemist* of February, 1855, Dr. Crawcour, of New Orleans, states that for twelve months past, he had been in the habit of using glycerine very extensively in those cases requiring cod-liver oil, in which the nauseous taste of the latter medicine rendered its exhibition impossible, and that now, in his practice, it had entirely superseded cod-liver oil.

In a paper read at the meeting of the Royal Institution of 30th March, 1855, by the Rev. John Barlow, F. R. S., attention was again drawn to the great preservative power of glycerine upon meat. On this occasion Mr. Barlow showed specimens of flesh which had been immersed, some partially and some wholly, in glycerine, for more than a month. I can answer for the flesh having appeared to be perfectly fresh.

M. Cap, worked upon the waste liquors of soap and stearic candle works, which liquors he had first to concentrate. His process was shortly this: He used sulphuric acid to separate the lime, and continued boiling and agitation to drive off the volatile fat acids, removing any excess of sulphuric acid by means of carbonate of lime; allowing the liquor to cool at different densities, so as to deposit sulphate of lime; and, after final concentration, treating and filtering with washed animal charcoal.

M. Cap's process, though an undoubted improvement, was not perfect, as glycerine so purified is always liable to contain more or less of salts of lime; and some glycerine, purified in our laboratory according to M. Cap's directions, contained in addition volatile fat acids; and though the process was known in this country, specimens of the so-called "pure" glycerine obtained from the best sources in London, so recently as last January, contained in every case more or less impurity.

The best specimen came from Edinburgh; but even this was not absolutely free from impurity. Some medical men appear to have been afraid to prescribe glycerine for internal use, sometimes with reason as appears from the *Chemist* of May, 1855, where Mr. Hamilton, of Liverpool, referring to the papers of MM. Cap and Garot, and of Dr. Crawcour, stated that no doubt the glycerine purified and used by them might be safely used internally; but that having doubts about the purity of the glycerine commonly sold as "pure glycerine," he had procured samples from several of the most respectable Chemists in Liverpool, and on examination had detected lead in considerable quantity, and that the specimen in which he detected the largest quantity of lead was labelled "pure glycerine," was sold at double the price of the common glycerine, and was warranted free from lead.

I will now proceed to describe the new process for obtaining and purifying glycerine, and may remark, that the road by which we arrived at pure glycerine, was rather a circuitous one. Our first step was to do away with the lime process of saponification, and with it our only source of impure glycerine. By our first improvement in separating the fat acids from neutral fats, the glycerine was decomposed by the direct action of concentrated sulphuric acid at a high temperature, and all that remained of it was a charred precipitate. A new process for decomposing neutral fats by water under great pressure coming under our notice, led us to look again more closely into our old distilling processes; and the doing this showed, what we had often been on the brink of discovering, that glycerine might be distilled.

In our new process, the only chemical agents employed for decomposing the neutral fat and separating its glycerine, are steam and heat; and the only agents used in purifying the glycerine

thus obtained are heat and steam. Thus all trouble from earthy salts or lead is escaped.

Distillation, however, purifies the impure glycerine of the old sources.

On the table is a series of products of palm oil, which will serve to illustrate the process. Steam, at a temperature of from  $550^{\circ}$  to  $600^{\circ}$  Fahr., is introduced into a distillatory apparatus, containing a quantity of palm oil. The fatty acids take up their equivalents of water, and the glycerine takes up its equivalent; they then distil over together. In the receiver, the condensed glycerine, from its higher specific gravity, sinks below the fat acids. Sufficient steam must be supplied, and the temperature regulated, otherwise the elements of the glycerine do not take up their equivalents of water, and acroleine is evolved—a body of a very different character, an acrid eye inflaming vapor, appreciated only by those who have had the misfortune of an experimental acquaintance with it.

In an ordinary apparatus the glycerine distilled from the neutral fat is not in a sufficiently concentrated state for most purposes; it should therefore be concentrated, and, if discolored, be redistilled. It is then obtained, in the state of the specimen on the table, at the temperature of  $60^{\circ}$  Fahr.; it is of sp. gr. 1.260, or to contain 98 per cent.

I have now to mention some uses for glycerine, which I believe to be new, or to which I have seen distilled glycerine applied.

A possible use which appears worthy of experiment is to inject it into the bladder, for the purpose of dissolving calculous deposits; from its blandness it should not cause irritation, while, as it is a solvent of urea and phosphate of lime, it might dissolve them when in the bladder. Some of the high authorities have received glycerine for the purpose of the experiment.

The use of glycerine in photography having been suggested, some distilled glycerine has been sent to several of the best photographers and makers of photographic preparations. It was very well received, and considered to promise well, and is still the subject of many experiments; but as yet it does not appear that any great results have been arrived at. It is, however, expected to supersede the honey and Shadbolt's process.

The properties of soothing and keeping moist the skin have caused it to be used upon chapped hands and sun-burnt faces. It has been proposed as a substitute for syrup in preserving fruits. Mixed with alcohol or pyroxylic spirit, it has been proposed by Mr. Warren De la Rue, as an economical fuel for spirit lamps.

For some time past, in Edinburgh as in London, it has been used in skin diseases; it is now being tried in some cases of diseases of the mucous membrane of the stomach.

We have been informed that in the preparation of several medicines glycerine may be substituted for syrup or sugar, with the effect not only of preserving the medicine in an active state and free from change, but also of very greatly improving its taste. Griffith's iron mixture has been mentioned to us as an instance of this.

Glycerine appears to give the means of preservation of some objects of natural history without change in their color. This is shown by the specimens of fish upon the table. Our first experiment was upon a brilliantly-colored two pound trout, caught in one of the Perthshire lochs. Immediately on taking it from the water I poured a quantity of glycerine over it, and wrapped it in a cloth. At night the fish was cleaned and immersed in glycerine. Next day it was again wrapped in a saturated cloth. On examining it a day or two afterwards in Edinburgh, the color on the scales was unchanged. When it arrived in London, part was steeped in water and then cooked. Though perfectly fresh and firm, it had lost almost all its flavor; the uncooked portion was immersed in glycerine, and sent to Professor Owen, who suggested that the brilliantly-tinted fishes of the Coral Islands and tropical coasts might be brought home in kegs of glycerine.

On the table are specimens of trout, roach and perch, which have been, the trout more than two months, the perch and roach more than one month, in their bottles. It will be seen that the colors continue bright.

I may now state, in conclusion, that though a variety of uses, actual and possible, for pure glycerine have been mentioned, yet when we consider its power as a solvent, and at the same time its blandness, and freedom from all irritant, exciting, acid, and fermenting properties, we must feel that not a tithe of its uses have yet been developed; and that in glycerine there is a wide



field opened, requiring many scientific and practical laborers, and which, once fully worked, will yield a ten fold crop of uses. Pure glycerine will then take its proper place among the most valued of modern products; and, produced, as it will be, in great quantities, it will be recognized in the arts as well as in medicine, as a new, real blessing to mankind.—*London Pharm. Journ.*, Nov., 1855.

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#### BLANCARD'S PILL OF THE IODIDE OF IRON.

Five years ago, M. Blancard, a pharmacien of Paris, proposed an unchangeable pill of the iodide of iron, made directly from its elements, which was officially approved by the French Academy of Medicine. The excellence of this preparation was generally acknowledged, and it is already, in France, the most common form for the administration of iodide of iron. Our pharmaceutical authorities at Philadelphia, however, adhere to the saccharine solution which Dr. Jackson introduced many years ago, and Prof. Bache declares that solid iodide "might well be dispensed with." Practitioners will differ sometimes from the chemists, and so it has proved in this case. It is found that, notwithstanding the assurances of the self-constituted authorities, the syrupy solution of iodide of iron *does* undergo change: that it often injures the teeth, disagrees with the stomach, and contains free iodine. Consequently, as our dispensatory-authors and colleges of pharmacy simply advise us, if we must have a pill, to evaporate their syrup, or to use the antiquated and unreliable process of Calloud, practitioners have found it of advantage to import M. Blancard's preparation, which is now very commonly prescribed, not only in New York and Boston, where there are agencies for the sale of it, but in many remote country towns. And here we may take the liberty of recommending to the gentlemen who have taken on themselves the direction of pharmaceutical matters in this country, that they should not be too dictatorial or dogmatic, if they expect to retain the authority which has been conceded to their talents and learning.\*

\* [Before our cotemporary of the Virginia Medical and Surgical Journal suffered himself to be delivered of the above unjust reflexions, he should have examined the subject a little more closely. Twelve years ago, Mr.

With these preliminaries, we give at length the process for preparing Blancard's pills, which we take from the *Bulletin de l'Académie de Médecine*. It is founded on the volatility of ether, and the insolubility of the iodide of iron in this vehicle:

Take of Iodine *seventy-seven grains*; Iron filings *thirty-seven grains*; Distilled water *two and a half drachms*; Honey *one drachm and thirty-four grains*; Absorbent powder (say powder of Althæa) *a sufficient quantity*. Make 100 pills.

Place the water, iodine, and iron in a Florence flask; shake the vessel as the reaction takes place; filter the green liquor that results, into a small iron capsule, the weight of which is known. Wash the flask, and filter with two and a half additional drachms of water, slightly sweetened with a portion of the honey to be used in making the pills. Pour both liquids into the capsule, and evaporate, at first rapidly, then at a gentler heat, until the weight of the mixture is equivalent to the combined weight of the iodine and honey (171 grains, or 3iij. nearly). Add a sufficient quantity of powdered althæa root, or, still better, equal parts of althæa and liquorice powder, about 3ij. Divide the mass into four equal parts; roll each part in powdered iron. Make each mass into a cylinder on an iron slab; divide each cylinder into twenty-five pills, and roll each pill in powdered iron, to cover the iodide exposed by the spatula. Expose the pills to a gentle heat that they may contract no moisture, and

Worthington, of Philadelphia, published an excellent formula (see vol. xv. page 71 of this Journal) for pills of iodide of iron. This is noticed in the Dispensatory along with others. The remarks there made of the ineligibility of solid iodide of iron for extemporaneous prescription, refers to the salt itself and not a solid preparation of it like Blancard's pills, and Dr. Bache very properly says, if a pill is wanted, get it by evaporating the syrup—or a syrup. What are Blancard's pills but a *honey* syrup of iodide of iron evaporated and rendered pilular by althæa, rolled in powdered iron and varnished? The suggestion to use powdered iron along with solid iodide of iron in pills we long since made, and others have done likewise. Further, Blancard's pills are not unknown in Philadelphia, and are prescribed by some of our physicians, but the majority very properly think that syrup of iodide of iron is to be preferred as a *pharmaceutical form* of this agent, and they claim to hold their honest opinion without being obnoxious to the charge of being "dictatorial or dogmatic."—ED. AMER. JOUR. PHARM.]

proceed at once to the second part of the process—varnishing the pills.

Make a solution of balsam of Tolu in three parts of ether. Place the pills in a porcelain capsule, pour on them a portion of the ethereal tincture, and impress a rapid movement of rotation, that the pills may be moistened on every side, and that the ether may evaporate rapidly. As soon as the pills begin to stick together, throw them on a dry surface, separating those that are agglutinated and leave them exposed to the air for twenty-four hours; then dry them over a stove at a gentle heat.

It is well to give them a second coating of varnish. Blancard puts them in a bottle with a stopper covered with silver, which is at once tarnished by the vapor of free iodine.

Each pill contains about one grain of iodide of iron, and one-fifth of a grain of powdered iron on its surface. Two to four pills daily is the ordinary dose in chlorotic, scrofulous, tuberculous, and syphilitic diseases. C. E.

*Virginia Medical and Surgical Journal, Oct., 1855.*

#### ON THE IDENTITY OF SANGUINARINE AND CHELERITHRINE, AND ON THE DIRECT DETERMINATION OF NITROGEN.

By DR. JAMES SHIEL, of St. Louis, Mo.

I have used a small portion of hydrochlorate of Chelerithrine which I received in 1843 from my friend, Prof. H. Will of Giesen, and which the discoverer of that alkaloid had prepared himself, to make a few analytical experiments as to its composition.

As the salt was not found to be free from impurities, it was dissolved in water, precipitated by ammonia, washed, dried, dissolved in ether, the filtered solution treated with animal charcoal, and the chelerithrine precipitated with a solution of pure sulphuric acid in ether; the sulphate of chelerithrine was washed with ether, dried and dissolved in water, when it yielded with ammonia a precipitate of pure Chelerithrine, which absolutely showed the same properties and behaviour as Sanguinarine.

Of the pure substance dried at 105° C.,

0.356 grammes burned with oxyd of copper and oxygen, fur-

nished 0.918 carbonic acid = 70.34 per ct. of carbon and 0.167 water = 5.21 per ct. of hydrogen.

The direct determination of nitrogen gave 5.07 per ct.

0.3925 gramm. of the double salt of the hydrochlorate of chelerithrine and chlorid of platinum: thence the atomic weight = 341.74.

Accordingly the composition of Chelerithrine is :

|           |   |   |   |   |        |
|-----------|---|---|---|---|--------|
| Carbon,   | - | - | - | - | 70.34  |
| Hydrogen, | - | - | - | - | 5.21   |
| Nitrogen, | - | - | - | - | 5.07   |
| Oxygen,   | - | - | - | - | 19.38  |
|           |   |   |   |   | <hr/>  |
|           |   |   |   |   | 100.00 |

The composition of Sanguinarine I found :

|           |       |       |        |
|-----------|-------|-------|--------|
| Carbon,   | 70.03 | 69.82 | 70.02  |
| Hydrogen, | 5.27  | 5.08  |        |
| Nitrogen, | 5.23  |       |        |
| Oxygen,   | 19.14 |       |        |
|           |       |       | <hr/>  |
|           |       |       | 100.00 |

The atomic weight was found in three determinations 322.7 ; 362.7 ; 346.4, or taking the mean = 343.9.

From all this it appears that Chelerithrine and Sanguinarine are one and the same substance corresponding to the formula  $C_{35}H_{16}NO_8$ . This formula gives :

|           |   |   |   |   |        |
|-----------|---|---|---|---|--------|
| Carbon,   | - | - | - | - | 70.80  |
| Hydrogen, | - | - | - | - | 4.97   |
| Nitrogen, | - | - | - | - | 4.35   |
| Oxygen,   | - | - | - | - | 19.88  |
|           |   |   |   |   | <hr/>  |
|           |   |   |   |   | 100.00 |

It will be perceived that the above formula includes one equivalent of carbon more than the one I formerly deduced from the analysis of Sanguinarine.

For the preparation of one or the other of these alkaloids the following method is the simplest and cheapest.

Digest the root of the plant *Sanguinaria Canadensis* (or *Chelidonium majus*) with water strongly acidulated with sulphu-

ric acid and precipitate with ammonia, wash and dry the precipitate, dissolve in ether, and treat with animal charcoal. After filtration the alkaloid is precipitated with a solution of pure sulphuric acid in ether. It is pure sulphate of sanguinarine.—*Siliman's Journal*, Sept. 1855.

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#### ON THE USE OF APIOL AS A SUBSTITUTE FOR QUININE.

(Taken from the Reports of MM. JORET and HOMOLLE to the Society of Pharmacy of Paris, and from the Experiments of Professor BOUCHARDAT.)

We have already,\* whilst alluding to the discussions on the various substitutes for quinine, spoken of the peculiar principle of parsley, which has been called *apiol*.

The paper on this new febrifuge, presented by Drs. Joret and Homolle, was, without doubt, the most valuable and important work which came before the society of pharmacy during that year. In a chemical and pharmaceutical point of view, said the honorable reporter of the commission, this memoir presents subjects of great interest, inasmuch as we are made acquainted with a new liquid product, extracted by a peculiar process from one of the most common and familiar of our plants, and endowed with properties so singular, as to separate it almost from any known chemical group. But the attention of the commission was more particularly drawn to the medical uses of the new remedy. The authors reported in detail one hundred and thirty-seven observations of fevers treated with the decoction of parsley seed, or with the *apiol* which is the active principle of this seed, of which number there were only five unsuccessful cases.

The commission of the society of pharmacy deemed it best to authenticate by every possible means, the favorable report on this new agent. They selected the various points where new experiments were to be conducted, and by the advice of the army board of health, the cities of Rome, Ajaccio, Perpignan and Rochefort were chosen, as being in countries where intermittent fever was endemic, and frequently resisted even the use of quinine. The result of the experiments made at these points, give the proportion of cures as only *forty-two* per cent. This proportion, whilst it is far below that derived from the quinine

\*Annuaire de Therapeutique, 1853.

under like circumstances, proves at the same time that the apiol does possess a certain antiperiodic value. None of the many substitutes for quinine boasted of at this day, have given a greater number of cures under similar circumstances. Far from rejecting apiol because it does not possess every possible virtue, we should experiment anew, and study patiently, and without any prejudice, all of its therapeutic qualities, and thus establish with accuracy its relative position with regard to the various salts of quinia. It might be then demonstrated, that whilst apiol could not be regarded as a complete substitute for quinia, yet, that it would greatly reduce the consumption of that costly agent, and under favorable circumstances, would answer the same purpose.

The society of pharmacy have thus reasoned in rewarding the authors of the memoir, and engaging them to continue their researches. Drs. Joret and Hemolle prosecuting their task, have published a new essay on apiol as a substitute for quinine. In making this examination, they have followed the programme laid down by the society, and constantly compared the therapeutic value of apiol with the sulphate of quinine. Classifying intermittent fevers according to their degrees of violence and obstinacy, and recapitulating the various rules which ought to guide the practitioner in the administration of any febrifuge remedy, they relate the cases in which this organic product gave the most favorable results; those where the results were only moderately successful; those where no effect was observed; and lastly, from the accumulation of clinical facts collected by many reliable observers in different countries and climates, they have ascertained the actual antiperiodic value of apiol, and its relative value when compared with the sulphate of quinine. In this way they have arrived at the following conclusion:—

Apiol whilst it does not take the place of the sulphate of quinine in the intermittent fevers of hot climates, can be very well substituted for the quinine in the intermittents of more temperate latitudes, as for instance in France.

We proceed to give our readers some extracts from this second memoir, which we think interesting and valuable.

The various products which were obtained by MM. Joret and Hemolle from the parsley seed are as follows:

1st. Apiol, the active principle. Under this name we wish to include all of that botanical species whose extracts approach the oils in their characteristics, without at this time, endeavoring to point out to what class of chemical compounds they should be definitively attached.\*

2d. An essential volatile oil.

3d. A fatty crystallizable matter, solid at an ordinary temperature, but becoming fluid at 25° centigrade, which we have called the *butter of parsley*.

4th. Pectin, a vegetable jelly capable of furnishing pectic acid, and the pectates, under the influence of the alkalies. This is without doubt the apiine of Bracconot.

5th. Chlorophylle.

6th. Tannin; a yellow coloring matter; ligneous matter and non-organic salts which have not been isolated.

*The method of extracting Apiol.*—Apiol is obtained by treating parsley seed pulverized with alcohol (at from 70° to 80° per cent.) A certain amount of the powder is put in an apparatus for displacement. When it is sufficiently exhausted, the liquor collected is deprived of color by passing it through a bed of animal charcoal, and then distilled into a vessel holding about three quarts of alcohol. The residue is reabsorbed by ether or chloroform, and separated by a second distillation. Heat is applied until all traces of these menstrua are driven off, and then the product is mixed by trituration, with one-eighth of its weight of litharge, and left to stand forty-eight hours. After which it is filtered through a light bed of charcoal, and the apiol is obtained pure and colorless.

*Physical Characters.*—Apiol presents the appearance of a yellow liquid; oleaginous, staining paper like any other fatty body, although heat will drive off the stain, which will brown before the rest of the paper, and lose its transparency. It has a special and tenacious odor, which is somewhat like the pulverized seeds, but differs from the essential oil, which has a terebinthine smell,

\*Might not this chemical group consist of the different organic products which have been extracted from the seeds of many of the umbelliferous plants, and which are similar to apiol in their physical and chemical characters; anisol, cariol, cuminol, &c.; extracted from the seeds of the anise, caraway and cumin?

the taste is acrid and biting, and increases in strength after being held in the mouth.

*Chemical Characters.*—Apiol is soluble in alcohol of from 50° to 90°, in ether and in chloroform in every proportion. It yields nothing to boiling water. Potassium when thrown into apiol throws off rapidly a multitude of little gaseous bubbles, which would lead us to suppose that this substance was not as it has been supposed, a carburet of hydrogen, but that oxygen entered into its composition.

*Physiological Action.*—Apiol, in doses of from seven to fifteen grains, produces a cerebral excitement, very similar to that caused by coffee. One feels a sensation of vigor and composure, with a momentary warmth about the stomach. Persons who have taken it in these doses, complain neither of thirst, or pain in the stomach, nausea, vomiting, colic or diarrhœa. When the dose is larger, from thirty to sixty grains, we observe all the phenomena of an intoxication; flashes of light; giddiness, stumbling, vertigo and ringing in the ears, &c., &c. These are the effects produced by a large dose of the sulphate of quinine. The apiolic intoxication is precisely similar to the quinine intoxication, and this is the most remarkable point of resemblance between these two bodies. It is only in exceptional cases that borborygmus or colic has resulted from its use.—*Virginia Med. and Surg. Jour.* Nov. 1855, from *Annuaire de Therapeutique*.

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#### ON CHLOROPHYLL.

By PROF. MOHL.

An article on the *Botanische Zeitung*, for February last, is reproduced by Henfrey, in an English translation, in *Ann. and Mag. Nat. Hist.* for May and June, 1855. With the thoroughness which characterizes Prof. Mohl's researches, he first combats, apparently with complete success, Nageli's view of the utricular nature of chlorophyll-granules, showing that they have no investing membrane distinct from the contents, still less a cellulose coat comparable with the cell-membrane. He still believes that the grains of chlorophyll do not belong to the ternary series of products at all, but consist of a soft proteinous substance, related to albumen, in which in most cases one or more starch-grains are imbedded, and which owes its green hue to the presence of an



extremely small quantity of green coloring matter, seemingly deposited only or principally in its outer layer. By demonstrating the concurrence of chlorophyll in cells which contained no starch, or the growth of the green globules after the starch-grains have vanished, and in other cases the simultaneous increase of starch and chlorophyll grains in the same cells, Mohl has shown the groundlessness of Mulder's hypothesis, that chlorophyll is formed of starch altered by deoxydation, and that the evolution of oxygen by green foliage is merely the result of this supposed transformation of starch into green coloring matter and wax; and he maintains that, by appropriate evidence, he has abundantly demonstrated the principal mass of chlorophyll-grains to consist of a substance allied to protoplasm, which certainly cannot originate from a metamorphosis of the constituents of starch.—A. G.

*Silliman's Journal, Sept. 1855.*

#### ON HYDRATED SILICA AND SILICATE OF AMMONIA.

By J. LIEBIG.

According to some experiments of Liebig, the solubility of silica in water depends essentially upon the circumstance whether or no a sufficient quantity of water for its solution is present at the moment that it is separated from an alkaline silicate. If a sufficient quantity of water be present, a much larger quantity of silica dissolves than when water is saturated with gelatinous silica.

If a solution of soluble silicate, the strength of which per cubic centimetre is known, be gradually diluted with measured quantities of water, a point may be arrived at when, on the addition of an acid (muriatic acid) in slight excess, the fluid remains perfectly clear, and no silica is separated. From experiments it appears that by this process water will dissolve as much as 1-500th of silica.

Ammonia, like carbonate of ammonia, diminishes the solubility of silica in water; for when a few drops of ammonia have been added to the solution above described before the addition of acid, a fluid is obtained, which does not remain clear, but becomes opalescent, and finally gelatinous. Muriate of ammonia produces the same effect. A solution of carbonate of ammonia,

added to the above-described clear fluid after the addition of the acid, even when this has been diluted with double the quantity of water, causes it to become opalescent, and even to coagulate. The former appearance is produced even after the addition of a few drops of the solution of carbonate of ammonia; the latter, when the quantity added amounts to about one-eighth of that of the solution of the silicate.

From Liebig's experiments it appears that no chemical compound of silica and ammonia exists; the ammonia found by Struckmann in gelatinous silica is retained by this in the same manner as by porous bodies, such as alumina.

Way has observed (*Journ. Agric. Soc.*, xii. p. 124) that clay, which, as is well known, absorbs ammonia, also possesses the power of extracting the ammonia from water containing it. This property, says Liebig, explains why drainage-water seldom, if ever, contains traces of ammonia; the ammonia is not washed out of fields with a clayey soil. Way has explained this by the supposition, that ammonia, like lime, is capable of entering into the composition of the double silicate of alumina and lime contained in the soil, by displacing the lime; he has also expressed the opinion, that such double silicates of alumina and ammonia furnish plants with the ammonia required for the production of their nitrogenous constituents. Liebig expresses himself very decidedly in opposition to this explanation of the fact, the silicates of alumina absorbing ammonia like other porous bodies, (*sea-sand, abestos, Faraday*), and also against this supposed source of nitrogen for plants.—*Chem. Caz. Oct. 1, 1854, from Liebig's Annalen.*

## ON NITROGLYCERINE OR GLONOINE.

By J. E. DE VRIJ.

Nitroglycerine was first employed in medicine in America, under the name of glonoine. The author, who repeatedly paid attention to this body since its discovery by Sobrero, gives the following prescription for its preparation, which he has found most successful. 100 grms. of glycerine, of spec. grav. 1.262, dried at 302° F., are poured gradually into 200 cub. centims. of monohydrated nitric acid, which is to be cooled to 14° F. by a

freezing mixture; care must be taken that the mixture does not become heated above 32° F. As soon as the two bodies have united into a homogeneous fluid, 200 cub. centims. of concentrated sulphuric acid are added in small quantities. If the temperature be constantly kept below 32° F., there is no danger of the mass going off in vapor, but this readily takes place if it rises above this point. The nitroglycerine then separates in the form of an oily stratum upon the acids, from which it is separated by means of a funnel furnished with a cock.

The weight of the quantity obtained was 200 grms. By mixing the separated acids with water, 20 grms. more were obtained. This whole quantity of 220 grms. was dissolved in as little ether as possible, and the solution was agitated repeatedly with fresh water until this no longer reddened litmus-paper; it was then evaporated on the water-bath, and the product was dried until its weight became constant. It then weighed 184 grms.

From this it appears that the constitution of nitroglycerine is  $C^6H^6(NO^4)^2O^6$ ; thus  $C^6H^8O^6=92$  and  $C^6H^6(NO^4)^2O^6=182$ . It is a pale yellow oleaginous fluid, of spec. grav. 1.595 to 1.600 at 59° F. When heated to 330°, it is decomposed; this takes place with a strong explosion at a higher temperature. It also explodes when struck with a hammer upon an anvil. Sulphuretted hydrogen reacts upon it, with deposition of much sulphur.—*Chem. Gaz.*, Oct. 15, 1855, from *Journ. de Pharm. et de Chim.*, 3 ser. xxviii. p. 38.

## CONTRIBUTIONS TO TOXICOLOGY.

Translated from the "Archiv. d. Pharmacie" and "Buchner's N. Repertorium."

By J. M. MAISCH.

*Poisoning by a large quantity of Opium cured by Ammonia.*

Costa di Sert, Jr., reports to the Paris Academy of Medicine the following case:

Sixty grammes laudanum, equivalent to three grms. opium, were taken and remained in the stomach for six hours, without causing death. Costa thinks this is due to the large dose of opium which almost instantly caused palsy of the stomach, which rendered the absorption of most of the poison impossible. A few

drops of aqua ammonia given in a glass of water, caused a copious vomiting, restoring the functions of animal and organic life. As soon as vomiting ceased, all the symptoms of poisoning re-appeared. Another dose of ammonia caused more vomiting, the cessation of which was again followed by the symptoms of poisoning. Giving ammonia was continued until vomiting, which always followed it, had cleansed the stomach of all the opium.

In this case ammonia acted as an emetic, and at the same time as an excitant on the nervous system, and consequently if not the best antidote against narcotics, it is the first remedy that ought to be administered in such cases.—(*Gaz. Méd. de Paris*, 1855, No. 9.

#### *Poisoning by Lyon's Rats' Pills.*

On the evening of the 20th of October, a child of sixteen months took four or six of Lyon's pills; the frightened parents immediately administered the white of an egg stirred in milk; about two hours afterwards a violent vomiting and purging set in, together with cramps of the stomach, and although the first afterwards ceased, the purging continued, so that the child could not retain anything on the stomach. The stools were slimy and inodorous. A physician who had been called in, desired to know whether there was any metallic poison present; a few experiments hastily made showed the absence of phosphorus and heavy metals. An emulsion of ol. amygd. dulc. was given, and a few hours afterwards the purging lessened, and then the belly was more inflated than before; another emulsion combined with syr. rhei. and aq. amygd. amar. was prescribed, and about thirty hours after taking the poison the child was recovered so as to require only a mild tonic to complete the treatment.

This case shows that Lyon's pills are not so innocent to human beings, and they certainly require in their use some caution.

#### *Poisoning by Light-Gas, by Dr. Cluss.*

In a damp room of a house in a narrow street in Stuttgart, there lived a married couple, twenty-nine years of age. Through a leak in an underground gas-pipe in the street, gas escaped, which, unable to penetrate through the frozen ground, found its

way into the room, where it could be recognized by the smell. On December 31st, both were seized with stupefaction, connected with and increasing to headache, somnolency, unconsciousness, vomiting, general weakness, red and turgent face. These symptoms lasted until January 3d, when the woman, who had been nursing her husband, had to go bed, and soon after was found by the neighbors unconscious. Two persons volunteered to watch all night, and were found highly stupified the next morning. Bleeding was ordered, the blood run very slowly, was thick, black, tar-like. All four persons were taken to the hospital.

The brother-in-law, twenty-four years old, lay stretched out, was unconscious, eyes closed, violent spasms of the vertebral extensors, high degree of low-spiritedness, intense chilliness, pale face, fixed, wide pupils (as after belladonna), bloody froth on the mouth, rattling quick breathing, pulse 130, soft, beating of the heart imperceptible, extremities cold, elbows inflexible. Treatment: Bleeding on the arm, only two ounces of dark blood obtained, coagulating into a hard cake of the usual color; mustard plasters, cold fomentations on the head, acetic ether, slow recovery till the sixth day. The other friend, a female, twenty-nine years old, answered to all questions right, but slowly, eyes open, pupils normal, breathing quick, chilliness, skin cold, limbs moveable, but lax; after she went to bed natural heat and sleepiness. Treatment: Ice on the head and mustard on the chest; recovery on the third day. The husband and his wife were conscious, remembered all that had occurred, and recovered within a few days.—(*Wurtemb. Corresp. Blatt*, 1854, 45.)

*The "Sedra" of California, by Dr. K. Precht.*

The "Sedra," so-called on account of the resemblance of its leaves to those of the ivy, is similar to the *Rhus toxicodendron*, and belongs to the same genus. From June to October the leaves are of a greenish orange to red color, and then their poisonous properties are the most intense. The touch of the leaves, the smoke of the burning plant, is sufficient to cause the following symptoms: Tension, heat, swelling, pricking, redness, a complete inflammation, then dizziness of the head, weariness, chilliness and

heat, fuller and quicker pulse, red tongue, thirst and nausea, eye-lids and genitals swelled, the swelling of the face resembles erysipelas, often with blisters or pimples, secerning a serum, which soon become turbid, dries to a brown scurf or scales, and causes an insufferable burning and itching. Now gastric symptoms appear, brown covered tongue, sometimes dry and cracked, violent thirst, quick pulse, which sinks, accompanying a soporous sleep, the highest state of this poisoning, which has never proved fatal. Very often an itch-like eruption remains on the inner side of the extremities, on the scrotum and perinæum, sometimes lasting for four or six weeks, until by blood-purifying medicines and chiefly baths all the poison has been eliminated. With children and decrepit subjects often furuncles arise on the lower extremities and neck, and little ulcers containing much matter; they must be opened, heal up and are then replaced by others. Treatment: In the beginning an emetic, soap-baths, washing with chloride of lime and aq. ammonia, cooling purgatives, then Dover's powder. Thus the poisoning symptoms are effectually cut off, but not always the following troublesome diseases.—(*Buchner's N. Repert.*, iii. 7.)

*Reaction of Nux Vomica, by Dr. Schlienkamp.*

Nux vomica, extracted with diluted alcohol, lime-water or distilled water with a little sulphuric acid, and evaporated between 35 and 40° C. (95 to 104° F.) leave a crimson red residue, the former two after an addition of a little sulphuric acid. Half a grain powdered nux vomica with three or four grs. conchæ ppt. a few drops of water and sulphuric acid produce at the above temperature the same red, but lightened by the grayish white of the conchæ. The red color in all cases disappears on cooling after ten or fifteen minutes. This reaction may be observed several times by heating and cooling, until the carbon produced by the repeated heating dims the color to indistinctness. The same reaction will be had with the faba St. Ignatii.

Brucia and strychnia do not show these reactions. Salicin is colored red by concentrated sulphuric acid, but the color does not disappear in ordinary temperature.—(*Archiv. d. Pharm.*, 1855, Feb.)

## ON TARTRATE OF LIME AND A REACTION OF TARTARIC ACID.

By ARTHUR CASSELMANN.

The author, when occupied in the examination of Alexandrian senna, found that the aqueous extract deposited the lime salt of an organic acid on evaporation. This salt possessed a remarkable property; when gradually heated, after the addition of ammonia and nitrate of silver, it covered the sides of the test-glass with a metallic speculum of silver, in such a manner that the reaction may be compared with the reduction of nitrate of silver by aldehyde-ammonia. Even a very small quantity of the lime-salt was sufficient to reduce the nitrate of silver in the manner above-mentioned, but only when the nitrate was added in small fragments, instead of in solution. If it were added in solution, the reduced silver was deposited in the form of a gray powder.

When the hot solution of the lime-salt was mixed with neutral acetate of lead, an abundant white precipitate was obtained, which however always contained traces of the lime-salt, unless the fluid was rapidly altered whilst boiling. This precipitate was decomposed by sulphuretted hydrogen; the fluid containing the pure acid was evaporated, and the acid was obtained as a syrupy sharply-acid fluid, which exhibited no trace of crystallization even after standing for several weeks.

The author analysed the lead-salt of the acid; it had the composition of tartrate of lead. Analysis gave:—

|     |      |    |        |      |
|-----|------|----|--------|------|
| C   | 13.5 | 8  | = 48.0 | 13.5 |
| H   | 1.5  | 4  | 4.0    | 1.1  |
| O   | 22.7 | 10 | 80.0   | 22.6 |
| PbO | 62.3 | 2  | 223.2  | 62.8 |

Comparative experiments with artificially-prepared tartrate of lime presented the same behaviour. The remarkable fact, that tartaric acid, in one of its least soluble compounds, possesses the property of instantaneously reducing nitrate of silver, might be made use of in analysis for the detection of minute traces of this acid. Racemic acid, however, gives the same reaction, and also produces it instantaneously only when the nitrate of silver is added in the solid state.

Tartrate of lime occurs in considerable quantity in senna-leaves; but, from its sparing solubility, is not obtained from them

without difficulty. The author has made experiments upon the solubility of tartrate of lime, and found that this salt requires for its solution 350 parts of boiling, and 1210 parts of cold water.

The author also boiled tartrate of silver with ammonia, to ascertain whether, as stated by Werther, a new ammoniacal salt is thus produced. He was unable to find anything of the kind. —*Chem. Gaz.*, Oct. 15, 1855, from *Archiv. der Pharm.*

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#### ALLEGED ADULTERATION OF ANNATTO.

Mr. Redwood, in the absence of any formal paper for the evening, made some remarks on the subject of annatto, and the statements which had recently been published with reference to its use and alleged adulterations. His object in bringing the subject forward on this occasion was principally to elicit information. He had been requested by some parties engaged in the commerce of this article to make a thorough investigation of the questions relating to its production, preparation and use, with the view of correcting what these parties conceived to be very erroneous representations which have been made to the public. He was enabled, by means partly of specimens from the Museum of the Society, and partly of specimens obtained from other sources, to illustrate the different varieties of annatto as met with in commerce, and to point out their different properties.

Annatto, he stated, is a coloring matter derived from the seed of a plant, the *Bixa orellana*, which is a native of the West India islands, South America, and the East Indies. It is in South America, however, that the coloring matter is principally manufactured. There are two kinds of annatto imported into this country, namely:—

1. *Spanish annatto*, which is made in Brazil, and comes chiefly from Para, in baskets each containing thirty or forty pounds weight; and,

2. *Flag or French annatto*, which is made in French Guiana, and especially on the island of Cayenne, from whence it is exported in casks, each containing several hundred pounds.

These two varieties of annatto, differ considerably from each other in some of their characters and properties. Flag annatto



has a very disagreeable, somewhat putrescent smell, from which Spanish annatto is entirely free, the smell of the latter, when fresh and good, being rather agreeable than otherwise. But while Spanish annatto has a decided advantage over flag annatto in regard to this character, it is nevertheless inferior to flag annatto as a dyeing or coloring agent.

There are two processes described as those adopted in the manufacture of annatto. The seeds from which the annatto is obtained are red on the outside, but perfectly white within. One of the processes consists in rubbing and washing off the coloring matter from the surfaces of the seeds with water, then allowing the coloring matter to subside, and exposing it to spontaneous evaporation, until it acquires a pasty consistence. The other process consists in bruising the seeds, which contain albuminous and farinaceous matter, as well as the coloring principle, mixing them with water, and then leaving the mixture to ferment, during which operation the coloring matter collects at the bottom of the vessel, from which it is subsequently removed, and brought to the proper consistence by spontaneous evaporation. It is probable that the disagreeable smell of flag annatto arises from the adoption of the latter process, the fermentation being carried to the putrefactive stage. It is possible, also, that the superiority of the coloring matter in flag annatto may be due to the influence of fermentation.

In applying either of these processes in the countries in which annatto is made, the products are liable to great variation in quality, no two samples being precisely alike. The inspissation of the pasty mass is said to be effected by exposing it to the air in shady places; but if too long exposed to the air the color is injured by the action of light, and if not sufficiently inspissated, it undergoes injury from the action of the retained water. It is obvious, too, that in carrying out such a manufacture in the rude way in which it is likely to be conducted in those countries, there would be constantly varying proportions of the true coloring matter, and of starch, woody fibre, and other worthless constituents or impurity, contained in the annatto. Much of the annatto, as imported into this country, is in such an imperfectly inspissated state, that it cannot be kept for many months without

undergoing decomposition, often becoming filled with maggots, and rendered wholly unfit for use.

There are several different applications which are made of annatto. It is used, and this is probably its most extensive application, for dyeing silk and wool. It is said to be inapplicable for dyeing cotton. It is used by the Russians for staining the Russian leather. It is employed as a coloring agent in some kinds of varnish. It is also used for imparting color to cheese, butter and some other articles of human food. For some of these applications the annatto requires to be specially prepared for that particular purpose. In the state in which it is imported, it does not yield its color to water, but the coloring matter must be rendered soluble in water in order to be applicable for the coloring of cheese. If it be used for coloring varnishes, this preparation is not required or even available; but it has to be prepared in a different way. Hence, annatto is one of those imported articles which, before it goes into the hands of the retail dealers, is subjected to certain processes, by which it is fitted for the particular uses to which it is to be applied. One of the objects of thus preparing annatto for commerce, is to render it less liable to undergo decomposition than it would be in the state in which it is imported. In preparing annatto with these objects, certain additions are made to it. Substances are added, some of which are intended to prevent decomposition, and others to develop the color required, and make this soluble in the menstrua by which it is to be applied. Annatto prepared for coloring cheese has an alkali added to it, and it is either made into the form of a clear liquid of a dark yellowish-brown color, or of a stiff paste, unalterable by keeping, and the color of which is readily soluble in water.

[Mr. Redwood's further remarks had reference to the statements of Mr. Hassell, Dr. Normanby, and others, in reference to the adulteration of this article, with chalk, flour, turmeric, salt, soap, red ochre, copper and red lead, which he believed had caused an erroneous impression, calculated to injure honorable dealers.]

*Pharm. Journ.* Nov., 1855.

## ON SODIUM AND ITS MANUFACTURE.

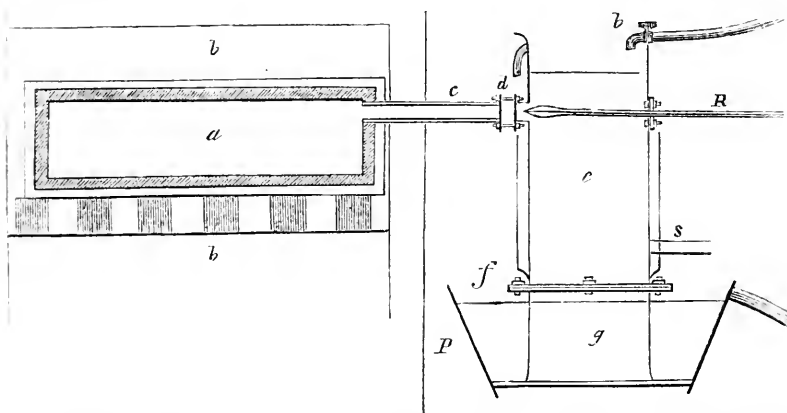
By WILLIAM BEATSON.

Having for some years given considerable attention to the production of the alkaline metals, I have succeeded in obtaining them (particularly sodium) in such quantities, as to show that it only needed the demand to be created, and they could be supplied in such a way, as would greatly promote the application and extension of science and the chemical arts, and it was only because that demand did not appear to exist, that the subject was allowed to remain in comparative abeyance. Now that such interest has been excited in the enlarged application of Mr. Wöhler's process, for preparing aluminium by means of sodium, chiefly through the exertion of M. St. Clair Deville, it may not be uninteresting to indicate the means by which this latter metal, sodium, may be extracted by enlarged and improved processes, which I have been led to employ for some time past.

The retorts, in which the mixture of carb. soda and coke has been heated, have been chiefly of malleable iron; but, as it is difficult to obtain these of a large size, retorts of earthenware or fire-clay have been used with success, and probably a fire-clay retort, with a lining or trough of malleable iron, will be found to be the best form of distilling apparatus, though with great care cast-iron retorts may yet be employed with advantage. The principle improvement which I have effected, and which is now engaging the attention of M. Deville, consists in making the process continuous; so that the retort is maintained at nearly a uniform temperature, and only requires the introduction of a fresh charge when the previous one has been worked off. If the materials are properly proportioned, the retort becomes nearly empty at the termination of each distillation; or, if an excess of carbon remains in the retort, it is available in the following operation, so that in this way one retort has been kept in full action for a week, and sometimes for nearly a second week, without interruption. As soon as one distillation is completed, and the condenser removed, a fresh charge of soda and carbon is introduced into the retort, through the same tube as emits the sodium, by means of a long semi-circular scoop, and the retort being nearly filled, the new distillation commences in a short time, and

proceeds with the greatest regularity and success; the sodium which I have sent to the Paris exhibition, was prepared in this way, and, as before stated, it was only because there seemed to be no demand for the metal, that it was not prepared on an industrial and extensive scale; perhaps, as in some other instances, the supply may create or excite the demand. In addition to the sodium, it is well known that a large quantity of croconates and other compounds of soda distil over and are found mixed with the sodium, and as their separation is tedious in small quantities, I have constructed a large iron cylinder, in which the sodium and its impure admixtures are heated to fusion, below the surface of naptha or camphine, and a piston or plunger being then forced down by a powerful screw or hydraulic press, the pure metal is found in a mass above, and the impurities in the bottom of the cylinder.

The subjoined figure will explain the method of continuous distillation:—



(a) Retort of iron, inside of fire-clay. (b) Chamber of reverberatory furnace. (c) Eduction tube, attached by screws at (d) to the iron receiver (e), which is made in two parts, screwed together, and cemented at (f'), the lower part (g), containing naptha or camphine. (h) Tap supplying cold water, which by means of an external case circulates round the condenser (e), falling into the pan (P). (R) is a strong iron rod, with sharpened steel chisel at the end, for clearing out the eduction tube (c). (s) Escape tube for incondensable gases.

Rotherham, August 14th, 1855.

The Chemist.

## ON THE USE OF HENNA AND KOHEUL AMONGST THE ARABS.

BY M. BERTHERAND.

Cosmetics are employed amongst the Arabs with a double object; being not only designed to augment beauty, but to preserve health. Nearly all the women, particularly the Kabyles, and a great number of the natives of both sexes belonging to the higher classes, stain the hands and feet with henna. This substance, which is the flower of the *lawsonia inermis*, finely powdered and diluted with a little water, is applied to the extremities before going to bed, a soft linen rag afterwards enveloping the parts. The next day we will find these portions of the body stained of a yellowish brown, and this coloration will last for a long time (twenty days,) so that it is not necessary to repeat its application very often, notwithstanding the frequent use of baths, &c.

Henna seems, as it were by tanning the skin, to increase its tenacity, and it also diminishes its transpiration, and preserves its delicate sensibilities against all sudden changes of temperature. These advantages are so real, that the Arabs use the henna as a dressing to all wounds, even with their horses. The *lawsonia inermis* certainly deserves to be introduced under very favorable circumstances, into the materia medica. I have oftentimes witnessed its good effects in Algeria, especially in those distressing cases of foetid sweating of the feet. I have seen its application every week, result in entire relief.

These cosmetics are considered of so much importance by Mussulmen, that there are laws which thus speak of them. "It is a duty binding on the husband to furnish the woman with those cosmetics which custom has received and acknowledged as useful, as, for instance, the koheul for the eyes, ointment and oil for the hair, henna for the head, hands and feet; also those instruments which are necessary for anointing the head and body, &c."

Henna also possesses another value with these nations. The flowers are employed to perfume their clothes and their houses, and both of these are very much in need, as a general rule, of some such process.

In the cities, women paint themselves with saffron, or with an ointment (*rusma*), containing an arsenical base which is sometimes

productive of dangerous consequences. They also stain and unite their eyebrows at the base of the forehead, by using a strong decoction of nutgalls. The color obtained is of a deep chestnut. At other times this paint is composed of black lead, or again, of a mixture of oil and the cinders of the saffron flower (*carthamus tinctorius*.) These flowers are much cultivated for their coloring properties. They contain two coloring principles; one yellow and soluble in water; the other resinous, red and soluble in the alkalies, used particularly in the arts and as a cosmetic. The Arabian courtizans paint their cheeks with this carmine.

A hygienic practice equally common with the use of henna, is the koheul. Many persons think that this expression, and the use of this particular substance is found in the language, and is one of the customs of every oriental nation. The fact is that Mahomedans of every nation, Indians, Persians, Negroes, Turks, &c., all use this cosmetic. The habit of anointing the eyelids with some anti-ophthalmitic substance, can be traced to the very remotest antiquity. Jeremiah, Isaiah, Ezekiel, St. Jerome, Clement of Alexandria, allude to it. The Greeks and Romans used these things. Pliny thus expresses himself: "*Vis stibii principalis circa oculos, nam quæ ideo etiam plerique platyophthalmos id appellavêres, quoniam in calliblepharis mulierum dilatat oculos,*" that is to say, the principal effect of the antimony concentrates itself about the eyes, hence we generally call it platy-ophthalmos, because of the ophthalmic ointments used by women, this is the one which dilates the eyes.

Amongst the Arabs, we find koheul used always by the higher and most educated classes. The use of this substance, which principally consists of the *sulphuret of antimony*, was commanded by all the Arabian wise men, and enjoys a popular reputation, justly merited. This preparation has the valuable property of preventing inflammation of the eyes, by its absorbing, owing to its dark color, a large portion of the luminous rays, and in giving to the eyelids a tenacity which enables them to contract and relax much more easily. It also prevents a supersecretion of tears, and thus renders the sight clear and strong. Its composition is variable; ordinarily, koheul is made of nothing but the sulphuret of antimony finely powdered, which is mixed with a

little water or some fatty body. It is kept in a narrow vial (mkhalèl) made of some of the precious metals. When it is to be applied, a very fine stylet (mirowed,) highly polished, is dipped into the bottle, and this covered with koheul, is passed between the eyebrows previously closed. The edges of the lids acquire a very deep tinge, which is blueish, if there is nothing used but antimony; but black, if the sulphuret has been mixed with lamp-black. The blue color is found amongst the negroes, who never use the latter ingredient.

In those tribes where the antimony is difficult to obtain, koheul is composed of the charcoal of the laurel, rose and black pepper, very finely pulverized. At other times, to give more astringent power to the preparation, they mix in a mortar, in equal proportions, sulphuret of antimony, sulphate of copper, burnt alum, carbonate of copper, some cloves and a little lampblack. This is carefully mixed together. Prostitutes make their koheul with a powder of the dried saffron leaves, mixed with lemon juice. This preparation must be applied for many hours, but will last a long time. Frequently the sweet rush (*andro pegon nardus*,) and benzoin, is mixed with koheul to improve the power of vision, and from the use of this substance in all forms of ophthalmic, I have found the greatest success.—*Virg. Med. and Surg. Jour.*, from "*Medicine and Hygiene among the Arabs*."

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## ON CHLORIMETRY.

By C. NELLNER.

The general employment of chloride of lime as a bleaching and oxidizing agent, with its readiness to undergo change when long kept, and the variableness of its chemical composition even when apparently prepared in a similar manner, has given rise to a number of methods for determining its practical value.

Chemical manuals contain numerous methods for this purpose, generally founded on volumetric principles; Duflos alone, in his 'Theory and Practice of Pharmaceutical Experimental Chemistry,' proposes, by means of *sulphurous acid*, to form a quantity of sulphuric acid corresponding with the efficient amount of chlorine as a bleaching or oxidizing agent, and thus to determine it as sulphate of baryta by weighing.

Notwithstanding many advantages, this method has met with but little acceptance, probably because sulphurous acid is not much employed in chemical laboratories; and, moreover, the aqueous solutions both of the free acid and its salts are converted by keeping into sulphuric acid and sulphates, so that when chlorimetric investigations only occur at considerable intervals, it is necessary to prepare this substance afresh upon each occasion, which will, of course, render the whole operation much too long for many.

All these disadvantages are got rid of by employing, instead of sulphurous acid, *hyposulphite of soda*, which is also converted into sulphate by free chlorine even at ordinary temperatures, and has hence been long employed for the removal of the last traces of chlorine from the stuffs bleached by it.

1 grm. of a sample of chloride of lime is mixed with about 2 grms. of hyposulphite of soda and water in a flask of such size, that when closed with a cork there shall be room enough left to allow of the complete diffusion of the chloride of lime by shaking, which is usually effected with ease. The complete conversion of the hyposulphite into sulphate takes place even in the cold, but for greater certainty the flask is heated a little in the water-bath. It is then mixed with a few drops of pure muriatic acid, or rather a sufficient quantity to make sure of the decomposition of all the excess of hyposulphite of soda, which takes place in the heated fluid immediately, with formation of sulphurous acid and sulphur. By inclining the flask and boiling for a few minutes, all the sulphurous acid is expelled, and the sulphur is deposited in drops exactly as in the decomposition of the metallic sulphurets by acids; so that on the complete decomposition of the excess of hyposulphite of soda, the fluid, which was at first milky and yellowish-white, becomes nearly limpid, and its separation from the melted sulphur by filtration is very easily effected, as is also the subsequent washing of the filter. The filtrate then contains the chloride of calcium of the chloride of lime, the excess of the muriatic acid added, and the chloride of sodium produced, together with a quantity of sulphate of soda exactly corresponding with the amount of oxidizing chlorine. This is precipitated with muriate of baryta.

As 16 of sulphur take up 8 of oxygen to form hyposulphurous



acid, and the same 16 of sulphur must again take twice 8 of oxygen to be converted into sulphuric acid, for every 2 equivs. of chlorine 1 equiv. of sulphate of baryta, representing sulphuric acid, will be formed, and—

116.5 parts by weight (= 1 equiv.) of sulphate of baryta will represent 71.5 parts (= 2 equivs.) of chlorine.

Hyposulphite of soda is unchangeable in the air, both in the solid state and in solution; and from its general employment, may be always obtained pure in commerce. Its conversion into sulphate by chlorine takes place readily, and its decomposition by muriatic acid gives origin only to sulphuric acid. Lastly, the sulphate of baryta formed is a compound which, when washed by decantation and afterwards on the filter, may be placed in the platinum crucible, dried, and heated to redness without decomposition. From these circumstances, this method appears to be preferable to all others, as with a little practice it may be effected as rapidly as the volumetric methods, and with a certainty equal to that of the most exact analyses.

A good commercial example of chloride of lime should furnish, according to the above method, at least its half of sulphate of baryta, which represents 30 per cent. of chlorine.—*Chem. Gaz.* Sept. 1, from *Liebig's Annalen*.

#### PRODUCTION OF SAFFRON IN KASHMERE.

Pampur, a large village on the right bank [of the river Jhelum], is celebrated for its saffron grounds. The cultivation of this flower is carried on in nearly every part of this *pergunnah*, the local soil being alone found suited for the purpose. It appeared to consist of a light ferruginous clay, which is excavated near the Jhelum, and carried to the fields by great manual labor. The bulbs are planted out in small square beds in June, weeded and freely irrigated, and the crop is collected in October. The Maharajah and his myrmidons attend the gathering and take the *spolia opima* of the occasion. The drug is sold in the royal bazaar, and I was informed that one rupee *per seer* was levied as export duty on the trader. It varies in price according to quality. I observed some as low as five rupees the *seer* of two pounds, but this was mixed with very ancient stuff, or what was

often worse, with the dried *petals* of the flower. True saffron (under royal warranty) fetches from seven to ten rupees *per seer*, i. e., in Kashmeree coinage,—which is little more than half the East Indian Company's. Steeping the article in water previous to weighing out is commonly practised, which, in addition to increasing weight, injures its coloring properties irretrievably.

Sometimes the unwary Hindustanee merchant packs it in the damp state, and, on reaching the plains, discovers to his great sorrow that the precious purchase has become a mass of mouldy rubbish, unsaleable at a *piece*. This happened under my own observation.—Lieut. W. H. Lowther “*On the Natural Productions of the Vale of Kashmere.*” *Journal of the Agricultural and Horticultural Society of India*, vol. viii., (1854), and *Ph. Jour.*

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#### ON THE PURIFICATION OF ANTIMONY.

By M. J. LEFORT.

All chemists who have had occasion to use metallic antimony, know how difficult it is to purify it for pharmaceutical purposes, of the last portions of iron, of lead and above all, of arsenic, which it always contains. To these impurities I may add bismuth, which I have found in some quantity in two samples met with in commerce, the origin of which I was unable to trace.

The severe criticisms which have been published on the process hitherto indicated for getting antimony in a state of absolute purity, tend to show that this operation, although simple in appearance, is really attended with some difficulty.

Among the different processes for the purification of antimony, there are two, which, being recommended on the authority of Wöhler and Liebig, claim the especial attention of pharmacutists.

Wöhler's process is based on the transformation of the metals into acids, by means of nitrate of potash. There are thus produced insoluble antimoniate of potash, and soluble arsenite of potash.

Berzelius, who tried this process, found that it did not always yield a product free from arsenic, for the resulting antimony heated in the blowpipe flame with charcoal generally affords a slight alliaceous smell.

Liebig's process, to which some authors give the preference, is as follows :—

Sixteen parts of metallic antimony are mixed with one part of sulphuret of antimony and two parts of dry carbonate of soda, and the mixture fused in a Hessian crucible. The button of metal which results is powdered, then fused with one-and-a-half part of carbonate of soda, and the product of this operation is again powdered and fused a third time with one part of carbonate of soda.

I have found that this process, which in practice is rather tedious, does not answer well if the antimony contains much of the foreign metals. It is also subject to the objection that it is not economical, as during the three successive fusions, much of the antimony is lost in the scoria which is rejected. Moreover, Mosander, Berzelius, Berlin, Bucholz, and Trommsdorff assert that they have always found arsenic, even after fusing the metal many times with carbonate of soda.

I have endeavored to ascertain whether a more satisfactory result may not be obtained by substituting a wet process for the dry process. In fact, I have found that, by converting the antimony into antimonie acid by means of nitric acid, it is possible not only to dissolve all the arsenic in the state of arsenious acid, but also to convert the lead, bismuth, and iron, into soluble nitrates.

The following is the process I adopt :—

Into a porcelain capsule of large capacity placed under a chimney, I put 500 grammes of commercial nitric acid, and add, in small quantities at a time, 250 grammes of metallic antimony reduced to a fine powder. Each addition of metal causes the disengagement of abundance of nitrous fumes. All the antimony passes to the state of insoluble antimoniate of antimony, which is quite white, while the foreign matters remain in solution in the supernatant liquor. The product of this operation is thrown into a large precipitating vessel and washed several times by decantation, with water containing one per cent. of nitric acid. After eight or ten successive washings, the deposit is drained as much as possible, and then mixed with thirty or forty grammes of powdered sugar. The resulting paste is put into a Hessian

crucible, and calcined at a red heat. After the mass has cooled, there will be found beneath the scoria a button of metal, which, when tested with the blow-pipe and with reagents, will not afford evidence of the presence of a trace of any foreign metal, and especially of arsenic.—*Pharm. Jour.*, Nov., 1855, from *Journal de Pharmacie*.

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#### ON THE OBLIQUE DIRECTION OF THE LIGNEOUS FIBRE, AND THE TWIST OF THE TRUNKS OF TREES OCCASIONED THEREBY.

Read before the Academy of Sciences at Berlin, and published in its Proceedings.

This twist of the wood of many trees is a phenomenon well known to wood-cutters, shingle-makers, carpenters, and others, but almost entirely neglected by botanists. The distinguished geologist, the late Leopold von Buch, appears to have first directed the attention of scientific men to it; and De Candolle, in his *Organographie* (1827) was the first botanist who spoke of it. Little has since been done to substantiate or elucidate the phenomenon. In the pamphlet before us Prof. Braun gives the result of a great many observations made by himself in Germany, by his brother in France and Spain, and by the writer of this notice in the Mississippi Valley.

Most trees show this obliquity of the woody fibre more or less. In certain species the twist is almost uniformly in the same direction: in others both directions occur with about equal frequency; while in not a few no twist is distinctly observable. Sometimes the same direction prevails in the majority of the species of a genus, or even of a whole family: in other cases opposite directions occur in the same genus or family; and it is curious to remark that in some instances nearly allied species of Europe and America twist in opposite directions. In a few instances the fibre of a young tree is twisted in one direction; that of the old tree in the opposite direction.

In speaking of the direction, it is necessary to come to an understanding, first of all, as to what we mean by right or left, a distinction attended with more difficulty than would appear possible. Prof. Braun follows De Candolle and others in viewing the twist or coil objectively; imagining himself in the centre of

the coil. Thus viewed the bean-vine turns to the *left*, the hop-vine to the *right*, &c. Linnæus and others, however, have adopted the opposite, or subjective view, and regard the bean and other leguminous plants as turning to the right, as they appear to an observer standing before the coil.

The twist of the fibre may be discerned in splitting the wood, or in its cracks when the bark is stripped off, or in the course of the fissures made by lightning. Very often the bark itself, at the angles or superficial lines of the trunk, indicate the direction of the wood within very distinctly. We make a few extracts from 167 species observed.

No manifest twist has been observed in the species of *Fagus*, *Juglans* and *Carya*, either in Europe or America, nor in *Ulmus*, *Ailanthus*, *Fraxinus*, *Acer dasycarpum*, *Gleditschia* or *Robinia*, though the latter exhibits a very slight twist to the left. The woody fibre twists to the right in *Pinus strobus*, *Ostrya Virginica*, the Chesnut of Europe, the European and American *Salices*, *Populus pyramidalis*, *Cornus Florida*, *Liriodendron* (in Indiana and Illinois, though in cultivated specimens the twist was found to be the other way; but more observations are required), the Peach, Plum, and Cherry trees, and the European *Cercis siliquastrum*, the only leguminous tree known to twist to the right. The twist to the left hand is the more common: it occurs in most *Coniferæ*, especially in *Juniperus Virginiana*, *Taxodium distichum*, *Pinus sylvestris*, (of which young trees twist, however, in the opposite direction), *Picea excelsa*, &c., *Betula* *Alnus*, *Ostrya vulgaris* and *Castanea Americana* (both in opposite direction to the nearly allied species of the Old World), *Quercus robur*, *Populus angulata*, *Catalpa*, *Æsculus hippocastanum*, the Pear tree, and more than any other, the Pomegranate, also most Leguminous trees.

Most American Oaks, the Sassafras, *Acer nigrum*, the Apple tree, &c., twist about as often to the right as to the left,

The cause of the apparent twisting is not easily ascertained. It is not occasioned by an actual twisting of the whole stem, but belongs to the growth of the successive annual layers. Prof. Braun connects it with the growth of the wood-cells, of which the ends, at their formation are horizontal or nearly horizontal, become wedge-shaped as they elongate, and if these wedges

assume the same direction in the whole circumference of the stem, as they are apt to do, the wood-cells would assume a certain obliquity; so that this twist of the wood is connected with the intimate nature or disposition of the cells themselves. But this is not sufficient to explain the higher grades of the obliquity, which sometimes reaches an angle of 45 degrees. It would here be desirable to ascertain whether the cambium cells divide in this oblique direction and high angle. Any one who may take an interest in these investigations, is requested to institute observations and make memoranda, noting the number of trees observed, as well as the direction and angle of the twist observed, if any.—G. E. *Silliman's Journal, September, 1855.*

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DETECTION OF A CRUCIFEROUS OIL, WHEN MIXED WITH  
ANY OTHER FRUIT OR SEED OIL.

By M. MAILHO.

The difficulty of distinguishing the different fatty oils of commerce, in a state of mixture, has been the subject of various researches for a length of time, and yet the indicated tests do not always lead to an easy detection; especially when the mixture is the result of fraud, and the inferior oils added are in such proportion as to preserve to the adulterated article its physical characters. In such case Lefebvre's oleometer, which is usually used in commerce, does not indicate the true nature of the oil; and even when it indicates fraud, it cannot tell us what oil has been added. For olive oil, the nitrate of mercury test, proposed by Pou-tet, and the hyponitric acid of M. Felix Boudet, are sufficiently accurate reagents. Oils used for burning, find in chlorine (as proposed by M. Fauré) a delicate test for indicating the presence of an animal oil, but no method has yet been published for indicating the presence of a cruciferous oil in other fatty oils, such as linseed, nut, or olive oil.

Having been called upon to examine a certain quantity of linseed oil, in order to decide a dispute between buyer and seller, I subjected the oil to the different reagents as indicated by those Chemists who have principally studied this branch of analysis, and although they proved to me that the oil could not be pure, I was at a loss to specify the adulteration. After many futile ex-

periments, I found in saponification the means of detecting the nature of the fraudulent admixture. When acted upon by a caustic alkali, the oil deposited a small portion of sulphur, which blackened immediately the silver basin which I used in the operation. This circumstance caused me at once to suspect that the oil used for adulteration was derived from a cruciferous seed. I treated all the commercial fatty oils with a solution of pure caustic potash, and I had the satisfaction to see, that all the cruciferous oils yielded a quantity of sulphur, which in the state of alkaline sulphuret formed in the process, was quite sufficient to be detected by the usual reagents—as lead or silver, salts, &c. All the other oils, as linseed, poppy, nut oil, could be treated in the same way without any indication of the presence of sulphur.

I propose, therefore, the following as a test for an oil of the cruciferae—such as colza, rape, mustard, &c., in other oils. Twenty-five to thirty grammes (seven to eight drachms) of the suspected oil are boiled in a porcelain basin, with a solution of thirty grains of pure caustic potash in five drachms of distilled water. After an ebullition of a few minutes the whole is filtered, and the filtrate, when tested with nitrate of silver or acetate of lead paper, will speedily indicate the presence of sulphur.

If, instead of a porcelain capsule, the oil is saponified in a silver vessel, the blackening of the latter speedily becomes visible. This test is very prompt and delicate, indicating the presence of one hundredth part of a cruciferous oil in any other oil.—*Pharm. Journ., from Comptes Rendus.*

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#### PHYSIOLOGICAL AND THERAPEUTIC EFFECTS OF CARBONIC ACID.

Some weeks since M. Herpin, of Metz, stated the following facts to the Academy. Dr. Struve took the Marienbad waters for a painful affection of the leg. He had been unable for several weeks to walk without a crutch. Dr. Struve had the notion one day of exposing his leg to the action of the carbonic acid which escapes freely from the spring at Marienbad, and forms a bed several decimeters deep over its surface. After exposure for a while it produced a pricking sensation and warmth, which went on increasing till it occasioned a profuse perspiration of the diseased limb. On withdrawing then his leg, he was surprised to

feel no pain, and to find that he was able to walk without his crutch. He continued this treatment for some time, and has since experienced no return of his complaint.

There are now in Germany special establishments for baths, douches, and the inhalation of carbonic acid. According to M. Herpin, the first effect of exposure to the gas is a sensation of pleasant heat, like that from a garment of fine wool—then a pricking, and afterwards a burning which has been compared to that from mustard.

On the occasion of this communication, M. Boussingault related how he happened in 1826 to witness some of the effects mentioned by M. Herpin. He was visiting in the Quindiu, New Grenada, a part of the Cordillera, some *sofataras*, where numerous workmen were occupied melting and purifying sulphur. He encountered a crevice whence issued abundantly a gas of the odor of sulphuretted hydrogen. He attempted to descend in it in order to ascertain the temperature; but he had hardly entered the crevice when he felt a suffocating heat, which he estimated at  $40^{\circ}$  C., and a pricking in the eyes; respiration being difficult, he ascended quickly; his face was red and his perspiration abundant. After a while he descended again with his thermometer, and was surprised to find a temperature of only  $18\frac{1}{2}^{\circ}$  C. The extreme temperature was  $22^{\circ}$  C. The gas was composed of 95 per cent. of carbonic acid and 5 p. c. of atmospheric air and sulphuretted hydrogen. It was hence the carbonic acid which caused the sensation of heat and the irritation of the eyes.

At two other times, in 1827 and 1830, M. Boussingault experienced again the same sensations. He observed that the workmen who work long in the *sofataras* of the Cordillera, in contact with the carbonic acid, experience an enfeebling of the sight, and some of them become blind.

Dr. Herpin confirmed the fact with regard to the action of on the eyes of the baths of gaseous carbonic acid. He observed that the douches of carbonic acid had been used against "*amblyopia*," or enfeebling of vision, and different precautions were used to moderate the effects of the gas or diminishing the force of the jet, or its distance; or its direct action by interposing muslin. When the eyes have an inflammatory tendency, it irritates the organ, and even the neighboring parts; the heat sometimes produces dangerous congestion.—*Silliman's Journal*, Sept., 1855.



## GAS FROM PEAT.

There is much discussion in connection with the renewal of the engagements of the city of Paris with the gas companies. Attention has thus been called to the gas from peat, which for some time has been manufactured in Paris. M. Leon Foucault has been charged with measuring the comparative illuminating powers of coal and peat gas; and the result is in favor of that from peat, its power being 342, while that of coal is 100.

The manufacture of peat gas is more simple than that of coal. The peat, if put into an iron retort, heated to a low red heat, affords immediately a mixture of permanent gases, and vapors which condense into an oleaginous liquid, which two products separate on cooling. The oil is collected in a special vessel, and the gas passes into a gasometer. This carburetted hydrogen is wholly unfit for illumination, it giving a very small flame, nearly like that from brandy. The oil from the peat is a viscous blackish liquid, of strong odor; it is subjected to a new distillation, and resolved wholly into a permanent gas and hydrogen very richly carburetted. This mixture is strongly illuminating, giving a flame six or eight times brighter than the first and of more lively brilliancy. The two are mixed, and a gas of intermediate character obtained, which is delivered over for consumption.

M. Foucault has made his trials with a photometric method which will soon be made known. Its unit was not a single wax-candle, but a collection of seven candles, arranged in a hexagonal manner with spaces of one centimeter. A single candle is liable to too much variation, a compensation for which is secured when a number is employed.

By this method, a mean of five determinations gave for a burner of peat gas a light equivalent to  $23\frac{1}{4}$  candles; and the same burner with coal gas  $6\frac{3}{10}$  candles.

The illuminating power of pure oil from peat—the illuminating material “par excellence”—has been found, at equal pressures, 705, the intensity for coal gas being 100; and with equal volumes their numbers are 756: 100.—*Silliman's Journal*.

## AUSTRALIAN MEDICINAL PLANTS.

Dr. Ferdinand Müller, Government Botanist to the Colony of Victoria, Australia, has addressed to the Colonial Secretary, his first General Report on the Vegetation of the Colony, under date Melbourne, Sept. 5, 1853. In this report, which, in conjunction with other documents relating to Australia, has recently been printed and presented to Parliament, the author thus refers to the plants of that country, which, in his opinion, are likely to prove useful in medicine:—

The inestimable truth, that we may safely deduct the closest affinities of the medicinal properties of plants from their natural alliance—a truth which achieved the most complete triumph of the natural system over all artificial classifications—has generally guided me in tracing out which plants might be administered in medicine. By this guidance, I observed that our *Pimelece* are pervaded by that acridity for which the bark of *Daphne mezereum* is employed; that our *Polygala veronica*, F. Müll., the only described Australian species of a large genus, and in close relation to one lately discovered in the Chinese empire, not only agrees, like some kinds of *Comesperma*, with the Austrian *Polygala amara*, in those qualities for which that plant has been administered in consumption, but also participates in the medicinal virtue of *Polygala senega* from North America. *Gratiola latifolia*, R. Br., and *G. pubescens*, R. Br., *Convolvulus erubescens*, Sims, and the various kinds of *Mentha* are not inferior to similar European species. The bark of *Tasmania aromatica*, R. Br., appears to me to possess the medicinal power of Winter's bark, gathered from a similar tree in Tierra del Fuego; and this fruit is allied to that of the North American *Magnolice* used in cases of rheumatism and intermittent fever. The whole natural order of *Goodeniaceae*, with the exception perhaps of a few species, contains a tonic bitterness never recognized before, and discernible in many plants in so high a degree, that I was induced for this reason to bestow upon a new genus from the interior the name of *Picrophyta*: this property, which indicates a certain alliance to *Gentianeae*, deserves the more consideration, as the true gentians are so sparingly distributed through Australia, while the *Goodeniaceae* form everywhere here a prominent fea-

ture in the vegetation. Our Alps, however, enrich us also with a thick-rooted gentian (*G. Diemensis*, Griesebach), certainly as valuable as the officinal *Gentiana lutea*; and in the spring *Subæa ovata*, R. Br., and *S. albidiflora*, F. Müll., might also be collected on account of their bitterness. The bark of the Australian sassafras tree (*Atherospermum moschatum*, Forst.) has already obtained some celebrity as a substitute for tea. Administered in a greater degree of concentration it is diaphoretic as well as diuretic, and has for this reason already been practically introduced into medicine by one of our eminent physicians. *Isotoma axillaris*, Lindl., surpasses all other indigenous *Lobeliaceæ* in its intense acridity, and can be therefore only cautiously employed instead of *Lobelia inflata*. The root of *Malva Behriana*, Schlecht. scarcely differs from that of *Althæa officinalis*, and the salep root might be collected from many *Orchideæ*. Few may be aware the Cajepet Oil of India is obtained from trees very similar to our common *Melaleucæ*; and that even from the leaves of the *Eucalypti* an oil can be procured of equal utility. The Sandrac, exuding from *Callitris*, or pine tree, the balsamic resin of the grass trees, and, moreover, the *Eucalyptus* gum, which could be gathered in boundless quantities, and which for its astringent qualities might, here at least, supersede the use of kino or catechu, will probably at a future period form articles of export.

Several *Acaciæ* are of essential service, either for their durable wood, or for the abundance of tannin in their bark, which has rendered them already useful, or their gum; but the latter is even excelled in clearness and solubility by that obtained from *Pittosporum acacioides*, A. Cunningham. This species, as well as many other plants of the same order, is distinguished by a surprising yet apparently harmless bitterness—a quality that warrants our expecting considerable medicinal power, and which deserves so much more attention, as till now we know nothing of the usefulness of the *Pittosporææ*, although this order extends over a greater part of the eastern hemisphere.

The Australian manna consists in a saccharine secretion, condensed chiefly by the cicades from a few species of *Eucalyptus*, but is chemically very differently constituted to the *Ornus* manna, and much less aperient. All our splendid *Diosmeæ*—a real orna-

ment to the country—approach more or less in their medicinal effect to the South African Bucco-bushes.

*Baeckea utilis*, F. Müll., from Mount Aberdeen, might serve travellers in those desolate localities as tea, for the volatile oil of its leaves resembles greatly in taste and odor that of lemons, not without a pleasant, peculiar aroma. *Trigonella suavissima*, Lindl., proved valuable as an antiscorbutic spinach in Sir Thomas Mitchell's expedition; and the *Tetragonella implexicoma*, Miquel, the various *Cardamines*, *Nasturtium terrestre*, R. Br., or *Lawrencia spicata*, Hook., may likewise be used for the same purpose. The root of *Scorzonera Lawrencii*, Hook., a favorite food of the natives, would form, if enlarged by culture, an agreeable substitute for *Scorzonera Hispanica*, or asparagus; and *Anisotome glacialis*, F. Müll., a large-rooted umbelliferous plant from the snowy top of Mount Buller, will be added hereafter, perhaps, to the culinary vegetables of the colder climates. Seeds of the latter plants, amongst many others, have been procured for the Botanic Gardens. *Santalum lanceolatum*, R. Br., *Mesembryanthemum equilaterale*, Haw., *Leptomeria pungens*, F. Müll., and *L. acerba*, F. Müll., deserve notice for their agreeable fruit.—*Pharm. Journ.*, Sept. 1855.

## RESEARCHES ON OXYGEN IN A NASCENT STATE.

By M. AUGUSTE HOUZEAU.

In considering one of the more remarkable cases in which oxygen assumes a nascent state, namely that which occurs in the preparation of oxygenated water, I have been led to suppose that if by a happy doubling of the two atoms of oxygen, which are united to barium to form the binoxide, I succeeded in setting free the extra atom out of contact with any oxidizable substance, the molecule would in its disengagement show itself to possess in a high degree, oxydizing properties. It is this, in fact, which occurs when monohydrated sulphuric acid is allowed to react at a low temperature upon binoxide of barium. Of the various apparatus which I have employed in the laboratory of M. Boussingault for the preparation of nascent oxygen, the most simple consists of a tubulated globe, the narrower neck of which is fitted with a conducting-tube passing under a bell-glass

filled with water. The sulphuric acid being first poured in, it is sufficient to drop into it the earthy superoxide in small fragments, rapidly closing the neck of the globe with a cork. The disengagement of gas is not long delayed, and it proceeds the more rapidly the more the mixture becomes heated. In certain cases it is necessary to favor the reaction by plunging the globe into a water-bath at  $122^{\circ}$  to  $140^{\circ}$  Fahr., as in other cases is indispensable to moderate it by the use of cold water.

Nascent oxygen is a colorless gas, possessing a strong odor; it should be respired with care, as introduced into the system too largely, it gives rise to nausea, which may be succeeded by vomiting. Its odor, which at first is not repulsive, becomes insupportable when it has been smelt many times. Its taste suggests a little that of lobster.

Heated to about  $167^{\circ}$  Fahr., or exposed to solar light, it loses all its active properties. In the presence of water, and at the ordinary temperature of the air, it oxydizes most of the metals, even silver, superoxydizes in general the metallic protoxides, and transforms also directly arsenious, into arsenic acid, &c. The alkalis (potash, soda, lime, baryta) and the acids (sulphuric, phosphoric, nitric) react strongly upon it. Even ammonia, in contact with nascent oxygen, undergoes a great modification; its elements are truly burned, the result of the combustion being a nitrous compound. In fact, it is only necessary to pass into a bell filled with the odorous gas, a rod of glass wetted with a solution of ammonia, when the vessel is instantly filled with abundant vapors of nitrate of ammonia.

Phosphoretted hydrogen, not spontaneously inflammable, and which we know is unaltered at  $68^{\circ}$  Fahr. by ordinary oxygen, burns on the contrary with the emission of light in the nascent gas.

Lastly, hydrochloric acid dissolved in water cannot resist the energetic affinity of active oxygen; its elements are dissociated in consequence of the combustion of the hydrogen, and the chlorine set free will dissolve gold leaf placed in the modified acid.

Nascent oxygen is thus a *chloridizer* in the sense that chlorine is an *oxidizer*, and, in fact, it is to this remarkable power of combustion that the metallic superoxides owe their faculty of

causing the disengagement of chlorine under the influence of hydrochloric acid.

The odorous gas reacts yet more rapidly on iodide of potassium, the iodine of which it sets free; it spontaneously decolorizes the tinctures of litmus, cochineal, and logwood, sulphate of indigo, &c., thus manifesting a power which even chlorine can hardly equal. Porous bodies absorb it, and also singularly modify it, since by merely passing it slowly through a glass tube filled with asbestos, spongy platinum, lint, carded cotton, strips of flannel, or the like, the odor and oxydizing properties of the gas are destroyed.

Although from the properties just described, it would not be possible to confound the nascent gas with ordinary oxygen, I have nevertheless thought that their differences would be still more apparent by a comparative statement of their respective properties; thus:—

Comparison of the general properties of *Ordinary Oxygen* and of *Nascent or Active Oxygen*, both being in the free state and at a temp. of 59° Fahr.

|                                   | ORDINARY OXYGEN.                 | NASCENT OR ACTIVE OXYGEN.                                                           |
|-----------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
|                                   | Colorless, inodorous insipid gas | { Colorless, very odorous gas, having taste of lobster.                             |
| <i>Ammonia</i> - - -              | - - - - -                        | { Burns it spontaneously, transforming it into nitrate.                             |
| <i>Blue Litmus</i> - - -          | No rapid action - - -            | { Decolorizes it rapidly.                                                           |
| <i>Silver</i> - - - - -           | Does not oxydize it - -          | { Oxydizes it.                                                                      |
| <i>Phosphoretted Hydrogen Gas</i> | No action - - - - -              | { Instantly burns it with the omission of light.                                    |
| <i>Iodide of Potassium</i> -      | Does not decompose it -          | { Acts rapidly upon it, setting free the iodine.                                    |
| <i>Hydrochloric Acid</i> - -      | No action - - - - -              | { Decomposes it, setting free the chlorine.                                         |
|                                   | Is a feeble oxydizer - -         | { Is a powerful oxydizing agent and an energetic chloridizer [ <i>chlorurant</i> ]. |
|                                   | Very stable at all temperatures  | { Stable at 59°; is destroyed at about 167° Fahr.                                   |

Binoxide of barium is not, however, the only body which can thus disengage active oxygen, other oxygenated substances having also afforded it to me under certain circumstances.

When one considers in their *ensemble* the numerous chemical reactions to which oxygenated compounds give rise, and which alone constitute the greatest part of the metamorphoses of which Chemistry is the study, one may always recognize in *combined* oxygen that increased energy which distinguishes free oxygen

in a nascent state, and which the latter [usually] ceases to possess immediately it is isolated from its combinations: an inactivity the more characteristic, since it becomes a property also of the *odorous* gas, when the latter has been subjected to the influence of heat or of light, or to the contact of certain substances with which it forms no union. It is thus that arsenious acid, unalterable by ordinary oxygen, is directly oxydized by free nascent oxygen, in the same manner as oxygen itself operates in the state in which it exists in nitric acid or in water decomposed by chlorine.

The case is the same with hydrochloric acid, which, undergoing no alteration from contact with ordinary gaseous oxygen or from the nascent gas if previously heated up to 176 Fahr., acquires on the contrary, the power of dissolving gold in the presence of nitric acid or of the binoxides of barium, manganese, lead, &c., or of certain oxygenated salts, exactly in the same manner as in the presence of free, active oxygen, as mentioned above.

Hence the idea of the pre-existence of nascent oxygen in combination is that which I wish to enforce in this paper. Moreover, it must be borne in mind that the ordinary methods employed to liberate oxygen are scarcely of a nature to favor the emission of the gas in its primitive state, since they are based upon the employment of certain agents, such as caloric, light, catalytic force, capable themselves of destroying the activity of nascent oxygen. Thus, it appears that in calcining the peroxides of manganese or of barium, or the various oxygenated salts, such as chlorates, chromates, &c., it is impossible to obtain from them *active* oxygen, and even when Priestly, in his memorable experiment of the 1st of August, 1774, succeeded in decomposing the *Mercurius præcipitatus per se* (binoxide of mercury) by heating it in the burning focus of a lens, he could but set at liberty a degenerated principle, and the gas which he designated *dephlogisticated air*, which name Lavoisier, upon the creation of chemical language, transformed into *oxygen*, was none other than the hypothetical oxygen of modern chemists, modified by the disturbing forces employed at that period by the illustrious English philosopher.—*Pharm. Jour.* Oct. 1st, 1855, from *Jour. de Pharm. et de Chimie*.

# Varieties.

*On Perfumery.* By SEPTIMUS PIESSE.  
(Continued from page 558, vol. iii. 1855.)

## EMULSINES.

From soaps proper we now pass to those compounds used as substitutes for soaps, which are classed together under one general title as above, for the reason that all cosmétiques herein embraced have the property of forming emulsions with water.

Chemically considered, they are an exceedingly interesting class of compounds, and are well worthy of study. Being prone to decomposition, as might be expected from their composition, they should be made only in small portions, or, at least, only in quantities to meet a ready sale.

While in stock they should be kept as cool as possible, and free from a damp atmosphere.

### AMANDINE.

|                                        |   |   |                   |
|----------------------------------------|---|---|-------------------|
| Fine almond oil                        | . | . | 7 lb.             |
| Simple syrup*                          | . | . | 4 oz.             |
| White soft soap, or saponaceous cream, |   |   |                   |
| <i>i. e.</i> , Creme d'Amande          | . | . | 1 oz.             |
| Otto of almonds                        | . | . | 1 oz.             |
| " bergamot                             | . | . | 1 oz.             |
| " cloves                               | . | . | $\frac{1}{2}$ oz. |

Rub the syrup with the soft soap until the mixture is homogeneous, then rub in the oil by degrees; the perfume having been previously mixed with the oil.

In the manufacture of amandine (and olivine) the difficulty is to get in the quantity of oil indicated, without which it does not assume that transparent jelly appearance which good amandine should have. To attain this end, the oil is put into "a runner," that is, a tin or glass vessel, at the bottom of which is a small faucet and spigot, or tap. The oil being put into this vessel is allowed to run slowly into the mortar in which the amandine is being made, just as fast as the maker finds that he can incorporate it with the paste of soap and syrup, and so long as this takes place, the result will always have a jelly texture to the hand. If, however, the oil be put into the mortar quicker than the workman can blend it with the paste, then the paste becomes "oiled," and may be considered "done for," unless, indeed, the whole process be gone through again, starting off with fresh syrup and soap, using up the greasy mass as if it were pure oil. This

\*Simple syrup consisting of 3 lb. of loaf sugar boiled for a minute in one pint, imperial, of distilled water.



liability to "go off," as the cook would say when the "melted butter" is "turned the wrong way," increases as the amandine nears the finish; hence extra caution and plenty of "elbow grease" must be used during the addition of the last two pounds of oil. If the oil be not perfectly fresh, or if the temperature of the atmosphere be above the average of summer heat, it will be almost impossible to get the whole of the oil given in the formula into combination; when the mass becomes bright and of a crystalline lustre, it will be well to stop the further addition to it.

This and similar compounds should be potted as quickly as made, and the lids of the pots banded either with strips of tin-foil or paper to exclude air. When the amandine is filled into the jars, the top or face of it is marked or ornamented with a tool made to the size of half the diameter of the interior of the jar, in a similar way to a saw, a piece of lead or tortoise-shell being serrated with an angular file, or a piece of an "old saw" will do very well; place the marker on the amandine, and turn the jar gently round.

## OLIVINE.

|                          |   |   |                       |
|--------------------------|---|---|-----------------------|
| Gum acacia, in powder    | . | . | 2 oz.                 |
| Honey                    | . | . | 6 oz.                 |
| Yolk of eggs, number     | . | . | 5                     |
| White soft soap          | . | . | 3 oz.                 |
| Olive oil                | . | . | 2 lb.                 |
| Green oil                | . | . | 1 oz.                 |
| Otto of bergamot         | . | . | 1 oz.                 |
| " lemon                  | . | . | 1 oz.                 |
| " clove                  | . | . | $\frac{1}{2}$ oz.     |
| " thyme and cassia, each | . | . | $\frac{1}{2}$ drachm. |

Rub the gum and honey together until incorporated, then add the soap and egg. Having mixed the green oil and perfume with the olive oil, the mixture is to be placed in the runner, and the process followed exactly as indicated for amandine.

HONEY AND ALMOND PASTE. (*Pate d' Amande au Miel.*)

|                                     |   |   |                   |
|-------------------------------------|---|---|-------------------|
| Bitter almonds, blanched and ground | . | . | $\frac{1}{2}$ lb. |
| Honey                               | . | . | 1 lb.             |
| Yolk of eggs, number                | . | . | 8                 |
| Almond oil                          | . | . | 1 lb.             |
| Otto of bergamot                    | . | . | $\frac{3}{4}$ oz. |
| " cloves                            | . | . | $\frac{1}{4}$ oz. |

Rub the eggs and honey together first, then gradually add the oil, and finally the ground almonds and the perfume.

## ALMOND PASTE.

|                                     |   |   |                      |
|-------------------------------------|---|---|----------------------|
| Bitter almonds, blanched and ground | . | . | $1\frac{1}{2}$ lb.   |
| Rose water                          | . | . | $1\frac{1}{2}$ pint. |
| Alcohol, 60 o. p.                   | . | . | 16 oz.               |
| Otto of bergamot                    | . | . | 3 oz.                |

Place the ground almonds and one pint of the rose water into a stewpan : with a slow and steady heat cook the almonds until their granular texture assumes a pasty form, constantly stirring the mixture during the whole time, otherwise the almonds quickly burn to the bottom of pan, and impart to the whole an empyreumatic odor.

The large quantity of otto of almonds which is volatilized during the process renders it essential that the operator should avoid the vapor as much as possible.

When the almonds are nearly cooked, the remaining water is to be added : finally the paste is put into a mortar, and well rubbed with the pestle ; then the perfume and spirit are added. Before potting, this paste, as well as honey paste, should be passed through a medium fine sieve, to ensure uniformity of texture, especially as almonds do not grind kindly.

Other pasts, such as *Pate de Pistache*, *Pate de Cocos*, *Pate de Guimaure*, are prepared in so similar a manner to the above that it is unnecessary to say more about them here, than that they must not be confounded with preparations bearing a similar name made by confectioners.

#### ALMOND MEAL.

|                   |   |   |   |                       |
|-------------------|---|---|---|-----------------------|
| Ground almonds    | . | . | . | 1 lb.                 |
| Wheat flour       | . | . | . | 1 lb.                 |
| Orris root powder | . | . | . | $\frac{1}{4}$ lb.     |
| Otto of lemon     | . | . | . | $\frac{1}{2}$ oz.     |
| “ almonds         | . | . | . | $\frac{1}{4}$ draehm. |

#### PISTACHIO NUT MEAL, OR ANY OTHER NUT.

|                                                       |   |   |   |                   |
|-------------------------------------------------------|---|---|---|-------------------|
| Pistachio nuts (decorticated as almonds are bleached) | . | . | . | 1 lb.             |
| Orris powder                                          | . | . | . | 1 lb.             |
| Otto of neroly                                        | . | . | . | 1 drachm.         |
| “ lemons                                              | . | . | . | $\frac{1}{2}$ oz. |

Other meals, such as perfumed oatmeal, perfumed bran, &c., are occasionally in demand, and are prepared as the foregoing.

All the preceding preparations are used in the lavatory process as substitutes for soap, and to “ render the skin pliant, soft and fair ! ”

#### EMULSIN AU JASMIN.

|                    |   |   |   |                    |
|--------------------|---|---|---|--------------------|
| Saponaceous cream  | . | . | . | 1 oz.              |
| Simple syrup       | . | . | . | $1\frac{1}{2}$ oz. |
| Almond oil         | . | . | . | 1 lb.              |
| Best jassamine oil | . | . | . | $\frac{1}{2}$ lb.  |

#### EMULSIN AU VIOLETTE.

|                   |   |   |   |                    |
|-------------------|---|---|---|--------------------|
| Saponaceous cream | . | . | . | 1 oz.              |
| Syrup of violets  | . | . | . | $1\frac{1}{2}$ oz. |
| Best violet oil   | . | . | . | $1\frac{1}{2}$ lb. |

Emulsin, of other odors, can be prepared with tubereuse, rose or cassie (acacia) oils (prepared by enfleurage or maceration.)

For the methods of mixing the ingredients, see "Amandine."

On account of the high price of the French oils, the preparations are expensive, but they are undoubtedly the most exquisite of cosmetiques.

#### MILKS OR EMULSIONS.

In the perfumery trade few articles meet with a more ready sale than that class of cosmetiques denominated milks. It has long been known that nearly all the seeds of plants which are called nuts, when decorticated and freed from their pellicle, on being reduced to a pulpy mass, and rubbed with about four times their weight of water, produce a fluid which has every analogy to cow's milk. The milky appearance of these emulsions is due to the minute mechanical division of the oil derived from the nuts being diffused through the water. All these emulsions possess great chemical interest on account of their rapid decomposition, and the products emanating from their fermentation, especially that made with sweet almonds and pistachios (*pistachia vera*.)

In the manufacture of various milks for sale, careful manipulation is of the utmost importance, otherwise these emulsions "will not keep;" hence more loss than profit.

"Transformation takes place in the elements of vegetable caseine (existing in seeds) from the *very moment* that sweet almonds are converted into almond milk."—LIEBIG. This accounts for the difficulty many persons find in making milk of almonds that does not spontaneously divide, a day or so after its manufacture.

#### MILK OF ROSES.

|                             |   |   |                     |
|-----------------------------|---|---|---------------------|
| Valentia almonds (blanched) | . | . | $\frac{1}{2}$ lb.   |
| Rose water                  | . | . | 1 quart.            |
| Alcohol (60 o. p.)          | . | . | $\frac{3}{4}$ pint. |
| Otto of rose                | . | . | 1 drachm.           |
| White wax                   | } | . | $\frac{1}{2}$ oz.   |
| Spermaceti                  |   |   |                     |
| Oil Soap                    |   |   |                     |

*Manipulation.*—Shave up the soap and place it in a vessel that can be heated by steam or water bath; add to it two or three ounces of rose water. When the soap is perfectly melted add the wax and spermaceti without dividing them more than is necessary to obtain the correct weight; this ensures them melting slowly, and allows time for their partial saponification by the fluid soap; occasional stirring is necessary. While this is going on blanch the almonds, carefully excluding every particle that is in the least way damaged. Now proceed to beat up the almonds in a scrupulously clean mortar, allowing the rose water to trickle into the mass by degrees: the runner as used for the oil in the manufacture of olive (see last number of "Annals") is very convenient for this purpose. When the emulsion of almonds is thus finished, it is to be strained, *without pressure*, through clean washed muslin (new muslin often contains starch, flour, gum or dextrine.)

The previously-formed saponaceous mixture is now to be placed in the mortar and the ready-formed emulsion in the runner; the soapy compound and the emulsion is then carefully blended together. As the last of the emulsion runs into the mortar, the spirit, in which the otto of roses has been dissolved, is to take its place, and to be *gradually* trickled into the other ingredients. A too sudden addition of the spirit frequently coagulates the milk and caused it to be curdled; as it is, the temperature of the mixture rises, and every means must be taken to keep it down; the constant agitation and cold mortar effecting that object pretty well. Finally, the now formed milk of roses is to be strained.

The almond residue may be washed with a few ounces of fresh rose water, in order to prevent any loss in bulk to the whole given quantity. The newly-formed milk should be placed in a bottle having a tap in it about a quarter of an inch from the bottom. After standing perfectly quiet for twenty-four hours it is fit to bottle. All the above precautions being taken, the milk of roses will keep any time without precipitate or creamy supernatation. These directions apply to all the other forms of milk now given.

## MILK OF ALMONDS.

|                           |   |      |                       |
|---------------------------|---|------|-----------------------|
| Bitter almonds (blanched) | . | .    | 10 oz.                |
| Distilled (or rose) water | . | .    | 1 quart.              |
| Alcohol (60 o. p.)        | : | .    | $\frac{3}{4}$ pint.*  |
| Otto of almonds           | . | .    | $\frac{1}{2}$ drachm. |
| “ bergamot                | . | .    | 2 drachms.            |
| Wax, spermaceti,          | } | each | $\frac{1}{2}$ oz.     |
| Almond oil, curd soap     |   |      |                       |

## MILK OF ELDER.

|                      |   |   |                   |
|----------------------|---|---|-------------------|
| Sweet almonds        | . | . | 4 oz.             |
| Elder flower water   | . | . | 1 pint.           |
| Alcohol (60 o. p.)   | . | . | 8 oz.             |
| Oil of elder flowers | . | ● | $\frac{1}{2}$ oz. |

(Prepared by maceration.)

|                        |   |   |                   |
|------------------------|---|---|-------------------|
| Wax, sperm, soap, each | . | . | $\frac{1}{2}$ oz. |
|------------------------|---|---|-------------------|

## MILK OF DANDELION.

|                                   |   |      |                   |
|-----------------------------------|---|------|-------------------|
| Sweet almonds                     | . | .    | 4 oz.             |
| Rose water                        | . | .    | 1 pint.           |
| Expressed juice of dandelion root | . | .    | 1 oz.             |
| Esprit tubereuse                  | . | .    | 8 oz.             |
| Green oil, wax                    | } | each | $\frac{1}{2}$ oz. |
| Curd soap                         |   |      |                   |

Let the juice of the dandelion be perfectly fresh pressed; as it is in itself an emulsion, it may be put into the mortar after the almonds are broken up, and stirred with the water and spirit in the usual manner.

\*The imperial measure only is recognised among perfumers.

## MILK OF CUCUMBER.

|                              |   |      |   |                   |
|------------------------------|---|------|---|-------------------|
| Sweet almonds                | . | .    | . | 4 oz.             |
| Expressed juice of cucumbers | . | .    | . | 1 pint.           |
| Spirit (90 o. p.)            | . | .    | . | 8 oz.             |
| Green oil, wax               | } | each | . | $\frac{1}{2}$ oz. |
| Curd soap                    |   |      |   |                   |

Raise the juice of the cucumbers to the boiling point for half a minute, cool it as quickly as possible, then strain through fine muslin; proceed to manipulate in the usual manner.

## CREME DE PISTACHE.

(*Milk of Pistachio Nuts.*)

|                     |   |      |   |                       |
|---------------------|---|------|---|-----------------------|
| Pistachio nuts      | . | .    | . | 3 oz.                 |
| Orange flower water | . | .    | . | $3\frac{1}{4}$ pints. |
| Espirit Neroly      | . | .    | . | $\frac{3}{4}$ pint.   |
| Palm soap           | } | each | . | 1 oz.                 |
| Green oil, wax      |   |      |   |                       |
| Spermaceti          |   |      |   |                       |

## LAIT VIRGINAL.

|                  |   |   |   |                   |
|------------------|---|---|---|-------------------|
| Rose water       | . | . | . | 1 quart.          |
| Tincture benzoin | . | . | . | $\frac{1}{2}$ oz. |

Add the water very slowly to the tincture; by so doing an opalescent milky fluid is produced which will retain the consistency for many years; by reversing this operation, pouring the tincture into the water, a cloudy precipitate of the resinous matter ensues, which does not again become suspended in the water.

## EXTRACT OF ELDER FLOWERS.

|                    |   |   |   |          |
|--------------------|---|---|---|----------|
| Elder flower water | . | . | . | 1 quart. |
| Tincture benzoin   | . | . | . | 1 oz.    |

Manipulate as for virgin's milk.

Similar compounds may, of course, be made with orange flower and other waters.

## COLD CREAM.

Claude Galen, the celebrated physician of Pergamos, in Asia, but who distinguished himself at Athens, then at Alexandria, and afterwards at Rome about 1,700 years ago, was the inventor of that peculiar unguent, a mixture of grease and water, which is now distinguished as cold cream in perfumery, and as *Ceratum Galeni* in Pharmacy.

The modern formula for cold cream is, however, quite a different thing to that given in the works of Galen in point of odor and quality, although substantially the same—grease and water. In perfumery there are several kinds of cold cream, distinguished by their odor, such as that of camphor, almond, violet, roses, &c. Cold cream as made by English perfumers bears

a high reputation, not only at home, but throughout Europe; the quantity exported, and which can only be reckoned by jars in hundreds of dozens, and the repeated announcements that may be seen in the shops on the continent, in Germany, France and Italy, of "Cold Creme Anglaise," is good proof of its estimation.

## ROSE COLD CREAM.

|                            |                       |
|----------------------------|-----------------------|
| Almond oil . . . . .       | 1 lb.                 |
| Rose water . . . . .       | 1 lb.                 |
| White wax } each . . . . . | 1 oz.                 |
| Spermaceti }               |                       |
| Otto of roses . . . . .    | $\frac{1}{2}$ drachm. |

*Manipulation.*—Into a well-glazed thick porcelain vessel, which should be deep in preference to shallow, capable of holding twice the quantity of cream that is to be made, place the wax and sperm; now put the jar into a boiling bath of water; when these materials are melted add the oil, and again subject the whole to heat until the flocks of wax and sperm are liquified: now remove the jar and contents, and set it under a runner containing the rose water—the runner may be a tin can with a small tap at the bottom, the same as used for the manufacture of milk of roses. A stirrer must be provided, made of lance wood, flat and perforated with holes the size of a sixpence, resembling in form a large palette knife. As soon as the rose water is set running the cream must be kept agitated until the whole of the water has passed into it; now and then the flow of water must be stopped, and the cream which sets at the sides of the jar scraped down, and incorporated with that which remains fluid. When the whole of the water has been incorporated the cream will be cool enough to pour into the jars for sale: at that time the otto of rose is to be added. The reason for the perfume being put in at the last moment is obvious—the heat and subsequent agitation would cause unnecessary loss by evaporation. Cold cream made in this way sets quite firmly in the jars into which it is poured, and retains "a face" resembling pure wax, although one-half is water retained in the interstices of the cream. When the pots are well glazed it will keep good for one or two years. If desired for exportation to the East or West Indies it should always be sent out in stoppered bottles.

## COLD CREAM OF ALMONDS.

is prepared precisely as the above; but in place of otto of roses, otto of almonds is used.

## VIOLET COLD CREAM. (1st.)

|                          |       |                           |       |
|--------------------------|-------|---------------------------|-------|
| Huile violette . . . . . | 1 lb. | Wax and spermaceti, each  | 1 oz. |
| Rose water . . . . .     | 1 lb. | Otto of almonds . . . . . | 5 d.  |

## VIOLET COLD CREAM. (2d imitation.)

|                        |                   |                           |                   |
|------------------------|-------------------|---------------------------|-------------------|
| Almond oil . . . . .   | $\frac{3}{4}$ lb. | Sperm and wax . . . . .   | 1 oz.             |
| Huile cassie . . . . . | $\frac{1}{4}$ lb. | Otto of almonds . . . . . | $\frac{1}{4}$ dr. |
| Rose water . . . . .   | 1 lb.             |                           |                   |

. This is an elegant and economical preparation, generally admired.

TUBEREUSE, JESSAMINE AND FLEUR D'ORANGE COLD CREAM, are prepared in similar manner to violet (first form); they are all very exquisite preparations, but as they *cost* more than rose cold cream, perfumers are not much inclined to introduce them in lieu of the latter.

CAMPBOR COLD CREAM. (*Otherwise* CAMPBOR ICE.)

|                          |       |                        |       |
|--------------------------|-------|------------------------|-------|
| Almond oil . . .         | 1 lb. | Campbor . . .          | 2 oz. |
| Rose water . . .         | 1 lb. | Otto of rosemary . . . | 1 dr. |
| Wax and spermaceti . . . | 1 oz. |                        |       |

Melt the campbor, wax and sperm, in the oil, then manipulate as for cold cream of roses.

CUCUMBER COLD CREAM. (*Creme de Concombre.*)

|                          |       |                           |                   |
|--------------------------|-------|---------------------------|-------------------|
| Almond oil . . .         | 1 lb. | Wax and sperm, each . . . | 1 oz.             |
| Green oil . . .          | 1 oz. | Otto of Neroly . . .      | $\frac{1}{4}$ dr. |
| Juice of cucumbers . . . | 1 lb. |                           |                   |

The cucumber juice is readily obtained by subjecting the fruit to pressure in the ordinary tincture press. It must be raised to a temperature high enough to coagulate the small portion of albumen which it contains, and then strained through fine linen, as the heat is detrimental to the odor on account of the great volatility of the otto of cucumber; the following method may be adopted with advantage:—Slice the fruit very fine with a cucumber cutter, and place them in the oil; after remaining together twenty-four hours repeat the operation, using fresh fruit in the strained oil; no warmth is necessary, or, at most, not more than a summer heat; then proceed to make the cold cream in the usual manner, using the almond oil thus odorized, the rose water, and other ingredients in the regular way, perfuming, if necessary, with a little neroly.

Another and commoner preparation of cucumber is found among the Parisians, which is lard simply scented with the juice from the fruit, thus:—the lard is liquified by heat in a vessel subject to a water bath; the cucumber juice is then stirred well into it; the vessel containing the ingredients is now placed in a quiet situation to cool. The lard will rise to the surface, and when cold must be removed from the fluid juice; the same manipulation being repeated as often as required, according to the strength of odor of the fruit desired, in the grease. MELONS and other similar fruit will scent grease treated in the same way.

POMADE DIVINE.

Among the thousand and one quack nostrums, pomade divine, like James's powder, has obtained a reputation far above the most sanguine expectations of its concoctors. This article strictly belongs to the druggist, being sold as a remedial agent; nevertheless, what is sold is almost always vended by the perfumer. It is prepared thus:—

|                  |                   |                     |                   |
|------------------|-------------------|---------------------|-------------------|
| Spermaceti . . . | $\frac{1}{4}$ lb. | Gum benzoin . . .   | $\frac{1}{4}$ lb. |
| Lard . . .       | $\frac{1}{2}$ lb. | Vanilla beans . . . | $1\frac{1}{2}$ oz |
| Almond oil . . . | $\frac{3}{4}$ lb. |                     |                   |

Digest the whole in a vessel heated by a water bath at a temperature not exceeding 90° C. After five or six hours it is fit to strain, and may be poured into the bottles for sale. (Must be *stamped* if its medicinal qualities are stated.)

| ALMOND BALLS.         |                   |  | CAMPHOR BALLS.                               |                   |  |
|-----------------------|-------------------|--|----------------------------------------------|-------------------|--|
| Purified suet . . .   | 1 lb.             |  | Purified suet . . .                          | 1 lb.             |  |
| White wax . . .       | $\frac{1}{2}$ lb. |  | White wax . . .                              | $\frac{1}{2}$ lb. |  |
| Otto of almonds . . . | 1 dr.             |  | Camphor . . .                                | $\frac{1}{4}$ lb. |  |
| “ cloves . . .        | $\frac{1}{4}$ dr. |  | Otto of French lavender or<br>rosemary . . . | $\frac{1}{2}$ oz. |  |

Both the above articles are sold either white or colored with alkanet root. When thoroughly melted the material is cast in a mould; ounce gallipots with smooth bottoms answer very well for casting in. Some venders use only large pill boxes.

## CAMPHOR PASTE.

|                        |                   |                    |              |
|------------------------|-------------------|--------------------|--------------|
| Sweet almond oil . . . | $\frac{1}{2}$ lb. | Wax and spermaceti | } each 1 oz. |
| Purified lard . . .    | $\frac{1}{4}$ lb. | Camphor            |              |

## GLYCERINE BALSAM.

|                        |                   |                     |                   |
|------------------------|-------------------|---------------------|-------------------|
| White wax } each . . . | 1 oz.             | Glycerine . . .     | 2 oz.             |
| Spermaceti } . . .     |                   | Otto of roses . . . | $\frac{1}{4}$ dr. |
| Almond oil . . .       | $\frac{1}{2}$ lb. |                     |                   |

Of the remedial action of any of the above preparations we cannot here discuss; in giving the formulæ it is enough for us that they are sold by perfumers.

## ROSE LIP SALVE.

|                          |       |                     |                   |
|--------------------------|-------|---------------------|-------------------|
| Almond oil . . .         | 1 lb. | Alkanet root . . .  | 2 oz.             |
| Spermaceti and wax, each | 2 oz. | Otto of roses . . . | $\frac{1}{4}$ oz. |

Place the wax, sperm, and oil on to the alkanet root in a vessel heated by steam or water bath; after the materials are melted they must digest on the alkanet to extract its color for at least four or five hours; finally, strain through fine muslin, then add the perfume just before it cools.

## WHITE LIP SALVE.

|                          |                   |                       |                       |
|--------------------------|-------------------|-----------------------|-----------------------|
| Almond oil . . .         | $\frac{1}{4}$ lb. | Otto of almonds . . . | $\frac{1}{2}$ drachm. |
| Wax and spermaceti, each | 1 oz.             | “ geraniums . . .     | $\frac{1}{4}$ drachm. |

After lip salve is poured into the pots and got cold, a red hot iron must be held over them for a minute or so, in order that the heat radiated from the irons may melt the surface of the salve and give it an even face.

*Annals of Pharmacy.*

*Gelatine Paper.*—MR. DOBELL has called the attention of the Royal Society to Gelatine Paper as a medium for coloring light, likely to be useful in many employments, and in cases of weak sight. This kind of paper, which was first invented at Rouen, in 1829, is now produced in great perfection; it is highly transparent, and in sheets measuring sixteen inches by twenty



two, but can be made, if required, of the dimensions of the largest plate glass. These sheets, moistened with a solution of gelatine, may be stuck on the panes of a window, and thus change the light admitted to any required color. A green light, falling on the white silk made up by dress-makers, deprives it of all its painful glare; and in the same way, yellow silk is made to appear green by a blue light, as has been proved by actual experiment, and it is attended with the happiest results. Jewellers who have tried the green paper, say that, when once accustomed to working in a colored light, they find it greatly relieves their eyes. In reading, too, a sheet of the green paper laid on the page preserves weak eyes from being injured by the strong contrast of black and white, and enables many to read with comfort who have been hitherto obliged by too susceptible vision to abstain from books. Other applications of gelatine paper naturally suggest themselves; it may be used as screens and shades for many purposes; the glasses of spectacles may be coated with it; gardeners may use it in their conservatories; and the yellow will probably be taken into their service by photographers. By the addition of a small quantity of acetate of alumina during the process of manufacture, the gelatine paper becomes water-proof, just as linen or woollen cloth is rendered water-proof by the same chemical substance.—*Med. Times and Gazette*, January 6, 1855, from *Chambers' Journal*.

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*On the Fluid Extract of Scutellaria Lateriflora.* BY JOSEPH BATES, M. D.—Lately I have been using Tilden's fluid extract of scutellaria, with signal success, in the treatment of diseases attended with nervous irritation and irritability, restlessness, &c. In the treatment of children, it is invaluable for allaying these symptoms. The dose is a teaspoonful, repeated as often as the circumstances for indications require. It may be relied upon in some forms of hysteria. Patients convalescing from typhoid fevers, pneumonitis, arthritis, &c., or any disease with those symptoms, will be shortly relieved by one or two teaspoonfuls of this preparation. I have no hesitation in saying that those who give it a fair trial will find it efficient in the treatment of many diseases for the relief of which small doses of opium are frequently given, without any of its unpleasant sequences. Much more might be added in bringing this subject before the profession, but I have already, doubtless, trespassed in making my communication too long.

*Boston Med. and Surg. Jour.*

*New Lebanon Springs, N. Y., May 7th, 1855.*

## Editorial Department.

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### PHARMACEUTICAL MEETINGS OF THE PHILADELPHIA COLLEGE OF PHARMACY.

—At the request of the Register, Samuel S. Garrigues, we take this means of informing the members and graduates of the Philadelphia College of Pharmacy, that these meetings are held at the College Hall, Zane st., above 7th, on the first Monday of every month, from October to May inclusive. All members who would like it, will be notified regularly of the time of meeting by sending their names to the Register, (N. E. cor. 10th and Coates sts.), with such a request. As these meetings are devoted entirely to scientific and other subjects of interest to apothecaries and druggists generally, and are conducted in an informal, conversational manner, all may take part. Graduates, who are not members, are at liberty to attend and partake in the discussions, and members are invited to bring any specimens of drugs, chemicals, preparations or papers of interest.

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THAYER'S FLUID EXTRACTS.—We are indebted to Messrs. Henry Thayer & Co., of Cambridgeport, Massachusetts, for some fifteen samples of the fluid extracts prepared by them. A peculiarity of these extracts is that they all contain about 20 per cent. of alcohol, as the means of preservation, whether made with that menstruum or not. In those cases where the nature of the drug is resinous or oily, the proportion of alcohol is increased as far as is proper, to secure the solution of these bodies. They may therefore be looked upon as concentrated tinctures, with about half the usual proportion of alcohol found in that class of medicines. In the preparation of these fluid extracts, Dr. Thayer uses the process of displacement and the vacuum pan. In those cases where the alcohol present is an obstacle to their use, the honest answer is, employ other non-alcoholic preparations, but in a very large number of cases the small quantity of alcohol contained in them in their concentrated state is so insignificant that it may be overlooked. In strength they generally conform to the published recipes, and are more permanent than the saccharine fluid extracts, especially in cases where the active ingredients are insoluble or but partially soluble in a saccharine aqueous menstruum. We have only had leisure to examine a few of the samples, as those of Conium, Senna and Buchu, and have been very favorably impressed in regard to their efficiency. The Conium retains the natural odor of the dried leaves to a marked degree. The Senna is made with water, and after evaporation, sufficient alcohol added to preserve it. A medical friend, to whom we gave a portion, speaks of its efficiency as a cathartic, but says its action was attended with some griping. This probably arises from the

absence of aromatics the preparation having the pure odor of senna. The Buchu speaks for itself.

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GERMAN PHARMACEUTICAL SOCIETY OF NEW YORK.—Mr. J. M. Maisch, of New York, has furnished us with a *MS.* copy of the constitution of a Society of German Apothecaries in that City, and, as many of our readers are not aware of the existence of this association, we present it to their notice. An association likewise exists among some of the Germans of this city, with reference to foreign periodical literature, and the advantages which accrue to the members of such unions is so marked, that they are worthy of imitation by American pharmacutists.

*Statutes of the New York Pharmaceutical Society.*

FOUNDED OCTOBER 1, 1851.

ART. I.—*Object of the Society.*

The German Pharmaceutical Society of the City of New York has for its object the scientific and collegiate advancement of the apothecaries of New York, and neighboring cities. It provides for mutual improvement in science, and procures by its means, the best works on pharmacy and technics.

ART. II.—*On becoming a Member of the Society.*

1. Every real apothecary, who is the owner of an apothecary store in New York, or its neighborhood, may become an actual Member of this Society; and an *extraordinary Member*, every one, whose study is connected with the natural sciences. These last named members enjoy all rights, with the exception of votes at the election of the officers, and at the alteration of the Statutes; they also have no claim on the property of the Society.

2. Applications for membership must be made in writing to the President, who notifies the members in his next circular, with his request to present their objections, if any, either verbally or in writing, at the next meeting of the officers, which then accepts or rejects the applicant.

3. Each actual member on becoming such, has to sign the Statutes, and to pay two dollars to the Treasurer.

ART. III.—*Contributions.*

Actual Members pay monthly, 50 cts.

Extraordinary Members pay monthly, 25 cts.

ARTICLE. IV.

1. Members, on voluntarily leaving the Society, or on changing their residence, have to notify the President in writing; they have no claim on the property of the Society, but they may become members again, provided they have paid their dues up to the day of their quitting.

2. Members, who are in arrears for three months, and have been notified by the Treasurer, are regarded as expelled; the same of those Members who neglect to visit the General Meetings once a year, without sending a written excuse to the President.

ARTICLE V.

1. The business of the Society is conducted by a Board, consisting of seven Members, including President, Treasurer and Secretary.

2. They shall be elected at the Annual Meeting by a simple majority, for one year; they do not receive any compensation for their services, but are allowed the necessary expenses for writing materials.

ART. VI.—*Duties of the Board.*

1. The President, or in his absence, some Member of the Board, presides at the meetings.

2. The Secretary keeps the minutes, notifies the Members of the resolutions of the Board, carries on the correspondence; he is Librarian ex-officio, and has the keeping of all journals, books, and specimens belonging to the Society.

3. The Treasurer collects the dues for admittance, and the monthly dues of the Members, reports annually to the Society on the receipts and expenditures, and pays the expenses only after countersignature by the President and Secretary.

ART. VII.—*Meetings.*

1. The Board meets monthly, and fixes the time for the General Meetings, of which there shall not be less than two annually. Extra meetings may be convoked by the President on the motion of two members.

2. The business shall be conducted in the following order:

1. Reading of the Minutes of the last General Meeting.

2. Report of Committees and of the Board.

3. Unfinished Business, &c.

## ARTICLE VII.

The Statutes have validity for a year, when propositions for alterations may be handed in writing to the Board, and discussed on the next following meeting.

## ARTICLE IX.

The Society remains in existence as long as there are five actual members, who may then dispose of the property.

## ARTICLE X.

1. The Society uses its receipts for purchasing books and journals, which are to be distributed by a carrier employed by the Board.

2. The distribution is under the superintendence of the Board, who have to take due consideration of the residence of the members.

3. The reading time is seven days.

## ARTICLE XI.

The Members agree to take apprentices only under the following conditions:

1. Apprentices entering with their fourteenth year, have to stand four years; those entering after their sixteenth, three years; and when entering after their eighteenth, two years. The members consider it obligatory to notify the Board on taking an apprentice.

2. These apprentices, after the time of their apprenticeship, have to pass a stringent examination before a commission, and on passing the examination receive a certificate.

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BRONZE LATIN LABELS FOR SHOP FURNITURE.—For some months past, the Committee of the Philadelphia College of Pharmacy, on Latin Labels, have been engaged in getting out a new edition of the work, with an entirely new form of labels, which they expect to be ready for delivery in the present month, (January). The book will contain about 180 sheets or leaves bound together, and embracing more than 1600 labels, of five different sizes, for drawers and bottles. They are done in bronze on steel blue paper by a new process, which, while it increases the beauty of the labels, prevents the bronze from rubbing off. The Committee have endeavored to make this the most correct edition yet published, and as it embraces more than 400 more labels than the last edition, it merits the attention of pharmacutists and druggists. For further information see the advertising sheet.

ECLECTIC REMEDIES AS PREPARED BY THE SHAKERS.—During a visit to the Shaker village last September, we were shown some crude specimens of some of the “concentrated preparations,” so called by the Eclectic physicians, which were in course of preparation. Since then, Mr. Fowler, the enterprising chief of the medicine department of that people, has sent us specimens of *Leptandrin*, *Myricin*, *Podophyllin*, *Colocynthin* and *Macroytin*, neatly put up in ounce vials, enclosed in paper boxes, the vials covered with tin caps. The Macroytin and Podophyllin appear to be the resinoid matter of the respective drugs obtained in the way described in eclectic books. They have not been treated with animal charcoal or otherwise deprived of coloring matter, but possess the odor and appearance of pure preparations. In reference to the Colocynthin resin, we have some theoretical doubts. Colcynth pulp contains about 13 per cent. of resin, and 14 per cent. of colocynthin, but we are not prepared to say how much of the latter is retained in the resin after it is washed with water, nor will it be easy to decide the question without resort to a physiological experiment. If it does retain its activity this preparation may become a valuable agent in the hands of the physician. The Myricin and Leptandrin of the Shakers, are simply dry alcoholic extracts reduced to powder. They appear to possess the active properties of the respective plants yielding them, yet we cannot but believe that the really active principles may be more nearly reached than by a simple extract, as they do not seem to be resins. We would advise that in all cases where the character of the preparations, obtained by certain processes, is not well established, that the products be therapeutically tested by medical men *before* they are thrown into commerce, and their relative medicinal activity determined.

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*History of Medicine, from its origin to the nineteenth century, with an appendix, containing a philosophical and historical review of medicine at the present time.* P. V. RENOUARD, M. D. *Translated from the French by* CORNELIUS G. COMEGYS, M. D., Professor of the Institute of Medicine, Miami Medical College. Cincinnati, Moore, Wilstach, Keys & Co. 1856. Pp. 719, octavo.

The author commences his work with the following quotation from Cabanis: “In order to study and practice Medicine in a proper manner it is necessary to be impressed with its importance; and to be so impressed we must believe in it.” Which is evidently pointed at the skepticism in reference to medicine, as a science, which has and does prevail with many physicians.

Our author evidently himself is no medical skeptic. A careful study of its history has convinced him that in spite of its rival theories and changing doctrines, past and present, that there is a science of medicine around which, and mixed with which, these hypotheses exist. “As a science so far as regards theories, medicine offers the picture of a republic delivered up to many rival factions, which dominate by turns without ever obtaining lasting power. Theory is an arena of interminable discussions a real tower of Babel; it is the apple of discord among physicians. Who can flatter

himself to hold the equal balance among so many diverse or contrary opinions, to distribute equitably praise and blame; to mark the precise limit in each where truth ends and error commences?"

"This difficult enterprise I undertook, not to with a view of instructing others, but myself; not with the intention of publishing the result of my research, for I was ignorant what it would be, but pressed by a desire to assure myself if there exists in Medicine anything useful and certain, any principle whose evidence is as striking as that of a mathematical axiom, some practical rule whose utility would be incontestible."

Sprengel, the only historian who had attempted this task, had arrived at the conclusion—"That skepticism in medicine is the top stone of the science, and that it is the wisest part to regard all opinions with indifference and adopt none." This maxim our author holds to be erroneous, hopeless, and impracticable. He considers that "pure skepticism, then is impossible in a practitioner who each day finds himself placed in the necessity of making a decision on which will depend, perhaps, the life of his fellow-man. A practitioner can, therefore, not indulge in the skeptical indifference of which Sprengel boasts; he must on the contrary use every effort to free himself from it and rise to the point of rational conviction."

In this disposition of mind the author undertook to examine ancient and modern medical doctrines.

We have not space to pursue further the steps of his progress, but will quote from the introduction an outline of the arrangement of the subject.

"I divide into three books or three ages all past time. The first age commences with the infancy of Society as far back as historic tradition carries us, and terminates towards the second century of the Christian Era at the death of Galen in the reign of Septimus Severus. This lapse of time constitutes in medicine the foundation age. The germ of the Healing Art concealed, at first, in the instincts of men, is gradually developed; the basis of the science is laid and great principles are discussed. The human mind, always impatient, surpasses in its speculations the limits of the known and possible. Many branches of the art, such as Symptomatology and Prognosis are carried to a remarkable degree of perfection.

"The second age, which may be called the Age of Transition, offers very little material to the history of Medicine. We see no longer the conflicts and discussions between partizans of different doctrines; the medical sects are confounded. The art remains stationary, or imperceptibly retrogrades. I cannot better depict this epoch than by comparing it to the life of an insect in the nymph state; though no exterior change appears, an admirable metamorphosis is going on imperceptibly, within. The eye of man only perceives the wonder after it has been finished.

"Thus, from the fifteenth century, which is the beginning of the third and last Age of Medicine, or the Age of Renovation, Europe offers a spectacle of which the most glorious eras of the republics of Greece and Rome only can give us an idea. It would seem as if a new life was infused into the veins of the inhabitants of this part of the world; the sciences, fine arts, industry, religion, social institutions, all are changed. A multitude of schools are opened for teaching medicine. Establishments which had no models among the ancients are created for the purpose of extending to the poorer classes the benefits of the Healing Art. The ingenious activity of modern Christians explores and is sufficient for everything."

These three ages our author divides into eight periods, which he succinctly indicates as follows:

"The first, which we name the *Primitive Period* or that of *Instinct*, ends with the ruin of Troy, about twelve centuries before the Christian Era.

"The second, called the *Mystic* or *Sacred Period*, extends from the dissolution of the Pythagorean society to about the year 500 A. C.

"The third period, which ends at the foundation of the Alexandrian library. A. C. 320, we name the *Philosophical Period*.

"The fourth, which we designate the *Anatomic*, extends to the end of the first age, i. e. to the year 200 of the Christian Era.

"The fifth is called the *Greek Period*; it ends at the destruction of the Alexandrian Library, A. D. 640.

"The sixth receives the surname of *Arabic* and closes with the fourteenth century.

"The seventh period, which begins the third age, comprises the 15th and 16th centuries; it is distinguished as the *Erudite*.

"Finally, the eighth or last period embraces the 17th and 18th centuries. I call it the *Reform Period*.

The author has continued the history of medicine to the present time, in a series of detached essays published after his work, which the translator has conveniently brought together as an addenda. In glancing over this interesting volume there are many items we should like to offer for the instruction and amusement of our readers, and among them the excellent biographical pictures which our author sketches of medical characters, ancient and modern, as Hippocrates, Galen, Avicenna, Ambrose Paré, Haller, Harvey and Jenner, but space will not permit. But we must briefly allude to two points in the annals of Medicine which have given an impulse to its progress. The first was when the revelation, by the disciples of Pythagoras, of the mysteries of the Indo-Egyptian school of medicine, which for ages had been confined to the temples, caused the priests of Esculapius to bring to light the principles and rules of their medical practice under the penalty of seeing the sceptre of Medicine fall from their hands. The other was the taking of Constantinople by the Turks in 1483, under Mahomet II, which event drove a large number of learned men with their manuscripts to the cities of Western Europe, where they soon created a taste for Greek literature and gave an impulse to medicine which has never yet ceased.

The translator, Dr. Comérys has ably acquitted himself of the laborious task, and merits the thanks of every English medical reader in thus opening to their perusal the best history of medicine extant, and we doubt not the work will find a place in the library of every physician who aims at an acquaintance with the past history of his profession. To the enlightened pharmacist it also presents itself as a means of tracing back the history of his art in those long periods when it was involved in the duties of the physician. Our author says, "If it be true, and it cannot be doubted, that Therapeutics is really the essential part of Medicine—if it, in fact, combines all the advantages of the science, it cannot be questioned but that the ancients are far in our rear;" and granting the author's premises it may not be saying too much to aver. that the progress of Therapeutics in the last two centuries has been largely aided by the severance of Pharmacy

from Medicine, and its union with chemistry in the hands of a distinct class of laborers.

In concluding our brief notice, we must remark that the mechanical execution and material of the work are a credit to the Cincinnati press.

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*Pronouncing Medical Lexicon, containing the correct pronunciation and definition of most of the terms used by speakers and writers on Medicine and the collateral sciences, with addenda.* By C. H. CLEVELAND, M. D., &c. Cincinnati: Longly & Bro. 1855. pp. 302, 18mo.

For the above useful little volume we are indebted to the author. It is at once a scientific lexicon and a pronouncing dictionary of technical and scientific terms. The author, to convey his ideas of correct pronunciation, has adopted the phonetic signs, and in a preliminary table he gives these, so that those unacquainted with them may learn. As comparatively few have any acquaintance with the phonetic symbols, their adoption will be at first an impediment, but once learned they greatly facilitate the comprehension of the sounds intended.

The definitions are generally of the briefest character, the author aiming rather at comprehensiveness than fulness, yet in most cases the reader gets a fair idea. Occasionally a want of clearness is marked. For instance, "Nitric acid" is defined to be "Aqua Fortis," and the latter to be "Nitric acid." It would have been better to have said "Nitric acid, the highest oxide of nitrogen; a corrosive acid," and then, nitric acid as the definition of aqua fortis, would have been sufficient. And so of other items. Should the book go to another edition, the author might advantageously avail himself of chemical notation and symbols, in many cases, to give fulness without much increasing size. Errors in the text, typographical and in meaning, are not unfrequent, and exhibit a hasty revision of the proof sheets, as well as some want of care on the part of the author; for instance, at p. 22, Angustura is defined to be "a bark used in medicine yielding Brucia." The term "Cortex," is defined "Bark, the Peruvian Bark." "Docemasia" is called the "Art of examining fossils." "Magnesia Alba," is defined to be "oxide of magnesia." "Picro glycion" is said to be "an impure solanin obtained from Dulcamara." Besides this kind of errors, we observe some words spelled wrong and the error endorsed in the explanatory pronunciation, as "Galipera," for "Galipea." Gaultheria "procumbus," for *procumbens*; but these imperfections may be removed in another edition. On the other hand, the *virtues* of the book are very numerous; its small size, and the perspicuity exhibited in a large number of its definitions, and its extensive range of subjects, will render it a valuable aid to medical and pharmaceutical students, in calling to mind what has been learned and forgotten, or in understanding terms in the course of reading. It may also prove an excellent aid to the dispenser, in solving the obscure language in which some physicians seem to take pleasure in couching their prescriptions, to the great annoyance of the apothecary.



CATALOGUE OF THE CLASS OF THE PHILADELPHIA COLLEGE OF  
PHARMACY.

FOR THE THIRTY-FIFTH SESSION, 1855—56.

*With a List of their Preceptors and Localities.*

| Matriculants.         | Town or County. | State.        | Preceptors.              |
|-----------------------|-----------------|---------------|--------------------------|
| Adams, Charles T.     | Philadelphia,   | Pennsylvania. | T. Morris Perot & Co.,   |
| Alburger, Abram       | "               | "             | J. A. Rowe,              |
| Alspach, Michael      | "               | "             | Alfred Wiltberger & Co., |
| Bailey, Wm.           | Chester Co.,    | "             | Thomas J. Husband,       |
| Baker, James R.       | Philadelphia,   | "             | Dallam, Baker & Co.,     |
| Batthey, Robert       | Rome,           | Georgia.      |                          |
| Belknap, E. G.        | Philadelphia,   | Pennsylvania. |                          |
| Beam, Isaac R.        | "               | "             | Isaac R. Brown,          |
| Biddle, John          | "               | "             | William Biddle.          |
| Blinkhorn, George     |                 | England,      | Durand & Tourtelot,      |
| Bringhurst, Ferris    | Wilmington,     | Delaware,     | Edward Bringhurst,       |
| Brower, Noah B.       | Norristown,     | Pennsylvania. | A. J. Moloney, M. D.,    |
| Buckingham, T. L.     | Philadelphia,   | "             |                          |
| Bunn, Jonathan        | Trenton,        | New Jersey.   | John H. Ecky,            |
| Caldwell, James M.    | Philadelphia,   | Pennsylvania. | Thomas S. Weigand,       |
| Campbell, Charles L.  | "               | "             | G. H. Ashton,            |
| Chapin, Dwight,       | "               | "             | G. W. Nebinger,          |
| Chenoweth, John T.    | Cincinnati,     | Ohio.         | Rand & Chenoweth,        |
| Cline, Henry J.       | Philadelphia,   | Pennsylvania. | James Bond, M. D.,       |
| Corson, Joseph K.     | Montgomery Co., | "             | J. C. & W. Savery,       |
| Cox, Geo. R.          | Philadelphia,   | "             | G. H. Ashton             |
| Craige, Randolph      | "               | "             | Thos. W. Craige, M. D.,  |
| Culin, Joseph K.      | "               | "             | Samuel Simes,            |
| Cummings, Wm. T.      | "               | "             | A. H. Yarnall,           |
| Curry, John L.        | "               | "             | Russell & Schott,        |
| Darcy, F. B.          | Holly Spring,   | Mississippi.  | Frederick Brown,         |
| Dickson, John M.      | Philadelphia,   | Pennsylvania. | A. W. Gayley,            |
| Dickson, Wm. H.       | Lewistown,      | "             | James T. Shinn.          |
| Dilkes, Theodore      | Philadelphia,   | "             | H. M. Zollikoffer,       |
| Drummond, Geo. E.     | Norfolk,        | Virginia.     | A. B. Taylor,            |
| Douglas, Geo. W.      | Philadelphia,   | Pennsylvania. | Thomas P. James,         |
| DeChoudens, Joseph    | Corsica,        | France.       |                          |
| Emmert, Martin        | Freeport,       | Illinois.     | Emmert & Burrell.        |
| Evans, jr., Wm.       | Philadelphia,   | Pennsylvania. | Wm. Evans.               |
| Fearing, Henry Martin | Elizabeth City, | N. Carolina.  | Samuel C. Sheppard.      |
| Fell, E. R.           | Philadelphia,   | Pennsylvania. | Bullock & Crenshaw.      |
| Fuchs, P. P.          | Coblentz,       | Germany.      | B. J. Crew,              |
| Gerhart, Herman       | Philadelphia,   | Pennsylvania. | John Bley.               |
| Graham, Isaiah H.     | Carlisle,       | "             | Frederick Brown,         |
| Guthrie, Joseph T.    | Philadelphia,   | "             | Robert England,          |
| Harte, James Henry    | Cork,           | Ireland.      | Thomas Gegan,            |
| Hansell, Amos         | Rancocas,       | New Jersey.   | French & Richards,       |
| Hancock, Charles W.   | Belmont,        | Pennsylvania. | Charles F. Shrom.        |
| Hickman, Wm.          |                 |               | E. B. & S. S. Garrigues. |
| Higbee, Hugh H.       | Moorestown,     | New Jersey.   | Charles Shivers.         |
| Hollemback, W.        | Franklin Co.,   | New York.     | L. M. Emanuel,           |
| Holmes, George W.     |                 |               | T. M. Perot & Co.,       |
| Holt, Joseph          | Delaware Co.,   | Pennsylvania. | Joseph Holt.             |

| Matriculants.          | Town or County.  | State.         | Preceptors.              |
|------------------------|------------------|----------------|--------------------------|
| Huckel, Jacob          | Philadelphia,    | Pennsylvania.  | O. S. Janney,            |
| Hughes, C. Collin      | Norristown,      | "              | F. Klett & Co.,          |
| Iredrell, Saml. N.     | Philadelphia,    | "              | N. Spencer Thomas,       |
| Janney, Spencer N.     | "                | "              | O. S. Janney,            |
| Kauffman, John F.      | Harrisburg,      | "              | H. N. Rittenhouse,       |
| Kearney, W. H. Z.      | Philadelphia,    | "              | Alfred Wyrkoop,          |
| Kendall, J. H.         | Reading,         | "              | Wm. H. Needles,          |
| Lawsha, Henry          | Philadelphia,    | "              | A. W. Parsons,           |
| Le Fevre, W. H.        | Williamsport,    | Maryland.      | G. J. Chamberlain, M. D. |
| McBride, James         | Montgomery Co.,  | Pennsylvania.  | E. & C. Yarnall & Co.,   |
| McConaughy, A. D.      | "                | "              | G. I. Sterrett,          |
| McMullen, Jacob        | Philadelphia,    | "              | Wm. M. Bower,            |
| Mercein, James F.      | Easton,          | "              | Henry C. Blair,          |
| Mercer, J. T.          | St. Clairsville, | Ohio.          | J. & G. Cooke,           |
| Miles, John Q.         | Philadelphia,    | Pennsylvania.  | Wm. J. Carter,           |
| Morrell, Charles M.    | "                | "              | Henry A. Bower,          |
| Neal, Leander          | "                | "              | Samuel Simes,            |
| Nolen, Albert V.       | Boston,          | Massachusetts. | John C. Baker & Co.,     |
| O'Meara, Thomas P.     | Philadelphia,    | Pennsylvania.  | Rand & Chenoweth,        |
| Pancoast, Dillwyn P.   | Mullica Hall,    | New Jersey.    | Joseph C. Turnpenny,     |
| Paynter, Woodman S.    | Philadelphia,    | Pennsylvania.  | Gilbert & Co.,           |
| Perrot, E. Raphael     | Paris.           | France.        | Wm. M. Reilly,           |
| Pleis, John M.         | Philadelphia,    | Pennsylvania.  | John Horn,               |
| Pratt, Wm. H.          | New Haven,       | Connecticut.   | Wm. Hodgson, jr.,        |
| Richards George S.     | Philadelphia,    | Pennsylvania.  | Robert C. Davis,         |
| Richardson, Joseph G.  | "                | "              | Charles Ellis & Co.,     |
| Robbins, James W.      | Bordentown,      | New Jersey.    | S. W. Simes & Son,       |
| Robbins, Samuel C.     | Philadelphia,    | Pennsylvania.  | Jenks & Ogden,           |
| Rosengarten, Harry B.  | "                | "              | Rosengarten & Sons,      |
| Russell, J.            | "                | "              | O. Livermore,            |
| Scattergood, George J. | "                | "              | Charles Ellis & Co.,     |
| Seuret, J. Pedro       | Cienfuegos,      | Cuba.          | Rand & Chenoweth,        |
| Shick, Andrew J.       | Philadelphia,    | Pennsylvania.  | Bullock & Crenshaw,      |
| Schurk, Peter          | "                | "              | Dr. Nordman.             |
| Siddall, Frank H.      | "                | "              | John C. Baker & Co.,     |
| Siddall, George R.     | Madison,         | Indiana.       | J. Crawford Dawes,       |
| Slemmer, A. R.         | Philadelphia,    | Pennsylvania.  | J. C. Slemmer,           |
| Smart, Thomas H.       | "                | "              | Moyer & Hazzard,         |
| Smith, Isaac W.        | Reading,         | "              | Wm. Procter, jr.,        |
| Smith, Thomas          | Philadelphia,    | "              | N. Ranke, M. D.,         |
| Spencer, Hallam H.     | "                | "              | Henry C. Blair,          |
| Stanhope, Wm. B.       | Wilmington.      | Delaware.      | D. C. Harker,            |
| Steel, Wm. H.          | Philadelphia,    | Pennsylvania.  | George H. Ashton,        |
| Steen, James H.        | "                | "              | Isaac Jones,             |
| Stell, John J.         | "                | "              | Bullock & Crenshaw,      |
| Stevens, J. Blackford  | Madison,         | Indiana.       | Charles Ellis & Co.,     |
| Stuart, Charles J.     | Philadelphia,    | Pennsylvania.  | G. M. Snowden,           |
| Taylor, Horace         | "                | "              | D. & E. Parrish,         |
| Thompson, Wm.          | "                | "              | J. Weber,                |
| Tourtlot, F. J.        | "                | "              | Durand & Tourletot,      |
| Ulmer, George W.       | "                | "              | Joseph H. Brooks,        |
| Ward, Edward P.        | Newark,          | New Jersey.    | Schiefflin & Bro.,       |
| Warner, Wm. R.         | Easton,          | Maryland.      | Chamberlin & Anderson.   |
| Waterman, J. Spencer,  | Philadelphia,    | Pennsylvania.  | George D. Wetherill,     |
| Weaver, Thomas         | "                | "              | D. & E. Parrish,         |
| Wilson, Adam H.        | "                | "              | John Moffet,             |
| Wynkoop, F.            | "                | "              | A. Wynkoop,              |
| Wetherill, J. B.       | "                | "              | Thomas P. James,         |
| Young, Joseph          | "                | "              | J. R. Angney, M. D.,     |
| Zieber, Jacob          | Reading.         | "              | A. Rex,                  |

THE  
AMERICAN JOURNAL OF PHARMACY.

MARCH, 1856.

NOTES ON THE MERCURY OF NEW ALMADEN, CALIFORNIA.

By W. S. W. RUSCHENBERGER, M. D., U. S. NAVY.

The quicksilver mine of California is in Santa Clara county, twelve miles from the town of San José, which is fifty-four miles from the city of San Francisco. It may be reached by three routes; one by stage coach exclusively; one by way of Oakland, opposite to San Francisco, to which you are conveyed by a steamer in an hour, and then you take a stage. The third route is by steamer to Alviso, seven miles from San José. The roads are good, but, in the dry season of the year horribly dusty.

Recently a good hotel has been established, where the traveller is comfortably entertained, but not cheaply. Near it is a spring which reminds one of the waters at Saratoga. It is anticipated that this spring will attract visitors and invalids during a considerable part of the year, and it is for their accommodation the hotel has been prepared.

The mining company has built this house, and a number of neat cottages for the accommodation of the engineers, mechanics and others connected with the works. The whole is known under the name of New Almaden.

The hotel is just at the entrance of a mountain gorge, and is said to be about four hundred feet above the level of the sea. The entrance to the mine is seven or eight hundred feet higher, or about 1,200 feet above the ocean. From the summit there is a fine view of the valley of San José, which is a fertile plain (when it rains) of many miles in extent, shut in by ranges of hills of about 1,200 or 1,300 feet elevation. When the atmosphere is clear, as it generally is, shipping in the magnificent bay of San Francisco may be discerned from the heights of New Almaden.

This mine was discovered in 1843 or 4 by a Mexican, Capt. Castellero, of Santa Clara. The Indians were in the habit of painting their persons bright red; the source of this pigment they kept secret, but the Captain stealthily followed an Indian to it, and thus it became known. Such is the story.

The working of the mine was began in the year 1846 or 7, by an English Company, but from some reasons, was not profitable. In 1849 or 50, it fell into American hands, and now yields about 30,000 flasks annually.

The present entrance of the mine is by a horizontal shaft, (drift) which, with a rail way, penetrates the hill 1,200 feet. From this several passages, some seven or eight feet in diameter, made by removing the cinnabar, dip; the greatest depth from the surface at present attained is said to be 400 feet.

The ore is freed from its natural position by blasting, and by pick and shovel. The miners, native Mexicans, carry the ore in hide sacks on their backs, to the railway, by which it is brought into the open air, where it is assorted. The rich compact ore, in masses of from three to twenty pounds weight, is separated from the small fragments found mingled with what resembles common yellowish earth or clay. The several kinds are packed in coarse hempen sacks, which are conveyed in four horse wagons, a mile and a quarter down the steep hill, to the smelting works.

The yellowish clay-like matter is converted into oblong masses, resembling large bricks in form, by the addition of water, and dried in the sun. The object of making these "adóbés" will be understood presently.

The apparatus for smelting the ore is simple. A kind of reverberatory furnace three feet by five, is arranged at the extremity of a series of chambers of nearly, if not exactly of the same dimensions, namely, seven feet long, four wide, and five high. There are eight or ten of these chambers in each series: they are built of brick, plastered inside, and secured by iron rods, armed at the ends with screws and nuts, as a protection against the expansion by heat. The tops are of boiler iron, luted with ashes and salt.

The first chamber is for a wood-fire. The second is the ore chamber, which is separated from the first by a net-work partition of brick. The flame of the fire passes through the square

holes of this partition and plays upon the ore in the ore-chamber, which when fully charged contains ten thousand pounds of cinnabar. Next to the ore-chamber is the first condensing chamber, which communicates with it by a square hole at the right upper corner; and the communication of this first, with the second condensing chamber, is by a square hole at the left lower corner. An opening at the right upper corner of the partition, between the second and third condensing chamber, communicates with the latter. The openings between the chambers are at the top and to the right, and at the bottom and to the left alternately, so that the vapors from the ore chamber, are forced to describe a spiral in their passage through the eight condensers. The vapor and smoke pass from the last condensing chamber through a square wooden box eight or ten feet long, in which there is a continuous shower of cold water, and finally escape into the open air by tall wooden flues.

The floor or bottom of each condensing chamber is about two feet above the ground, and is arranged with gutters for collecting the condensed mercury and conveying it out, into an open conduit, along which it flows into an iron receptacle, from which it is poured into the iron flasks, through a brush to cleanse it of the scum of oxide formed on the surface on standing. Seventy-five pounds weight are put into each flask.

There are fourteen of these furnaces and ranges of condensers, with passages of eight or ten feet in width between them. A shed is constructed above the whole at a sufficient elevation to permit free circulation of the air.

It requires sixty hours to exhaust each charge of cinnabar, (10,000 lb). The fire is so regulated as to keep it uniformly at a red heat.

The cinnabar, either in irregular masses, or the finer particles worked up into the "adóbés" before mentioned, is piled in the ore-chamber, very much after the manner of arranging bricks in a kiln for burning.

The subtle nature of mercury is such that, notwithstanding the means here used to secure it, not a little escapes through the flues and the lutings. The roofs around are black with mercury, condensed in exceedingly minute globules. They may be detected in abundance by a hand microscope in the soot taken from the flues. The bricks which enter into the structure of the

condensing chambers very soon become saturated with mercury, and will yield a profit by being worked like the ores.

On examining the box, or trough of one of the series which had not been in operation for several weeks, I observed that its perpendicular sides were lined, to the depth of about one eighth of an inch, with a coat of mercury, which on being touched by the finger aggregated itself into globules, and ran down to the bottom in a tiny stream. This had been condensed by the shower through which the vapors necessarily passed to escape by the flues. The waste water is conveyed in a covered conduit about fifty yards, and at that point flows down the hill side. This conduit—a wooden box four inches square—is lined by a black deposit, which consists of mercury in minute globules. A barrel stood at the extremity of the conduit and was full of this waste water; I was assured that it had not been disturbed for a considerable time, probably two months.

An eagle (\$10) held just under the surface of this water during a minute or two and then rubbed with a finger, revealed the presence of mercury: the stars on the coin were of a bright silver white.

I filled a bottle from the barrel and brought it on board the ship.

I repeated there the experiment with the coin, and also with a slip of bright copper, but they exhibited no visible evidence of the presence of mercury.

A drop of the water spontaneously evaporated from a glass slide, left a stain which was shown, under (about 450 diameters) my microscope, to consist of fine globules of metallic mercury.

By evaporating the contents of a watch crystal spontaneously, the view was brilliant by reflected light, compared by one of the observers to the starry canopy of a clear night.

I found by comparison that the globules in good mercurial ointment were four or five times as large as those left by the Almaden water after evaporation.

Lime water produced a copious precipitate, which collected on a filter, and then submitted to the blow pipe on charcoal, yielded a very strong horseradish odor.

Very slight precipitate was produced by a solution of chloride of barium, even after standing twenty-four hours.

The presence of selenium is inferred.

The slag or ore, after having been submitted to the action of the furnace, was placed on charcoal with soda and subjected to the flame of a blow pipe. The horseradish odor was very marked.

The slag powdered and dissolved in aqua regia, gave a reddish brown precipitate on the addition of ammonia, which is presumed to be selenium.

Del Rio announced the presence of this mineral in the quicksilver ores of a mine in Mexico. I believe from the very limited examination I have been able to make of it, that the cinnabar of New Almaden contains selenium.

The suspension of metallic mercury in water, in a state of minute division is new to me. The specific gravity of the metal is so great compared with water, that I should have said that it would subside very speedily on standing.

The specific gravity of the waste water of New Almaden, indicated by one of Dr. W. H. Piles's carefully made hydrometers, was 1,002.

Men and other animals employed about the smelting works are obnoxious to salivation, and to mercurial affections. But those who dig the ore enjoy health.

It is a desideratum to discover a means of cooling to a low temperature the condensing chambers, which will be at the same time simple and cheap. Labor is at from three to five dollars a day, and when combined with any special intelligence, at a much higher rate. Therefore, the means of refrigeration should not be complicated, or of a kind easily put out of order.

It is believed that the addition of lime to the kiln, or in the condensing chambers, would increase the yield of mercury, but not to an extent sufficient to pay the cost of the lime at New Almaden.

The outside temperature is from 70° to 90° F., so that it is not easy to keep the condensing chambers cool by the circulation of atmospheric air. The sulphurous, or sulphydric acid eliminated prevents the circulation of water in iron tubes from being resorted to.

May not the selenium exercise an influence, catalytically or otherwise, in the smelting process?

## MORE POISON IN "SODA WATER."

BY JOHN T. PLUMMER, M. D.

One of our apothecaries having just fitted up a new soda-fountain, presented me with a glass of its sparkling contents projected upon raspberry syrup. After the pungency of the carbonic acid had passed off, there remained in my mouth a very sensible metallic taste, which was so persistent that it lasted several hours. I remembered that the whole apparatus was *new*; and believed that the impression left upon my tongue was not due to the quality of the syrup used.

Not satisfied with any explanation that presented itself to my mind, I returned to the store, and called for a glass of the clear water without syrup. A somewhat mawkish, metallic taste was very apparent to all who sipped it.

What occasioned the flavor in question? Could chippings of copper have been left in the "fountain?" Or a part of the fountain have escaped the tinning, leaving the copper exposed to the action of the carbonic acid? Or was the taste due to copper at all?

Ferro-cyanide of potassium added to the water produced a discoloration, varying, by time, from a yellowish to a yellowish green, greenish, and bluish hue. No precipitate followed. The addition of dilute sulphuric acid made no perceptible difference in the action of the re-agent. I then proceeded more systematically.

1. One pint of the clear soda-water was evaporated in a Berlin dish to two ounces. A white film appeared during evaporation, on the surface of the water and the sides of the vessel. This was probably carbonate of lime, from our limestone water.

There was also a slight, light-brown deposit of what I supposed was vegetable or other organic matter. As silver, lead, copper and tin were the metals which constituted the apparatus, I tested the liquid remaining in the capsule in reference especially to them.

2. Hydrochloric acid was added to the condensed fluid, and the mixture warmed. No precipitate followed. The absence of silver, mercury and probably lead, was inferred.

3. In the already acidulated liquid, I suspended a bright needle. A scarcely perceptible tarnish appeared on it.



4. Into another portion of the fluid sulphuretted hydrogen was passed. The water instantly became chocolate brown. On boiling it, a black precipitate was formed, which, on being washed, was found to be insoluble in cyanide of potassium.

5. Chromate of potash, added to another portion of the fluid, yielded a gamboge yellow precipitate, which was soluble in potash. (Colorless flocculi remained in the otherwise clear liquid.)

6. Sulphuric acid rendered the *filtered* concentrated liquid (1,) slightly milky; and after some time, a white precipitate fell.

7. In the same liquid (1,) iodide of potassium produced a fine yellow precipitate.

Thus experiments 4, 5, 6 and 7, all concurred in proving the presence of lead in the water.

8. On the addition of ferro-cyanide of potassium to the filtrate of 4, a blue tinge was given to the liquid.

9. On adding the same re-agent ( $\text{Cfy} + 2\text{K}$ ) to the acid liquid, a clear, pea green color was produced, deepening in shade, until it changed to a fine *ultramarine* blue. A blue precipitate followed, leaving the supernatant liquid of a pea green color.

I have no authorities at hand which would justify any definite conclusions from the reactions in experiments 8 and 9; but relying upon my own examinations of solutions of tin with ferro-cyanide of potassium, I did not hesitate to infer the presence of this metal in the soda-water. (I may refer to the reactions of  $\text{Cfy} + 2\text{K}$  and  $\text{Sn}$  more particularly at another time.)

To recapitulate: the soda-water contained *lead* and *tin*, but no copper or other metal sought for.

*Richmond, Indiana, 12th mo. 24th, 1855.*

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#### REMARKS ON A CARBONIC ACID WATER APPARATUS.

By THE EDITOR.

Carbonic acid water, under the name of "Mineral Water" and "Soda Water," is becoming every year more extensively into use as a beverage in the warmer season of the year, and, as when pure, it is perhaps the least objectionable of all substitutes for pure cold water, its preparation is necessarily a subject of some importance to that numerous body of apothecaries throughout the country who keep it on sale. In large cities and towns the preparation of carbonic acid water has become a distinct busi-

ness, the makers furnishing the fountains or reservoirs, to the retailers, who pay an additional sum for their use; but in small towns, either the pharmacist must prepare the water himself, or have it sent from the larger towns, which last is always objectionable as inducing the necessity of keeping a larger supply than is favorable to the proper condition of the preparation. In our last number the apparatus of Bernhard, of this city, was figured and described (see page 12). In the present we will exhibit cuts explanatory of another form of apparatus, compact and simple in its construction, and well adapted for use in small towns as well as in cities, where the apothecary prefers to serve himself in manufacturing the water.

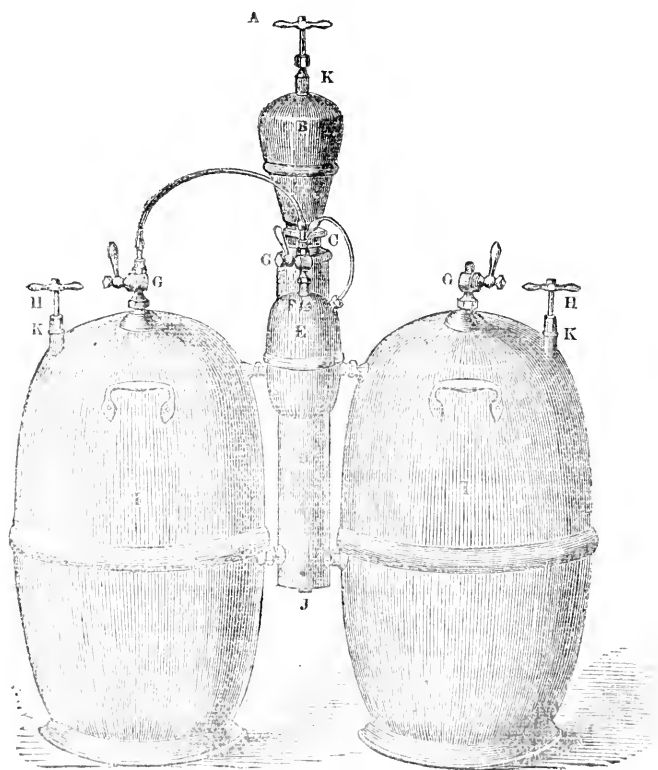


Fig. 1.

This apparatus, known as *Nichol's Patent Combination, Fountain*, (see fig. 1,) is constructed of copper thickly coated with tin on the interior surfaces. The peculiarity consists in the

union of the generator and fountain or fountains, and in employing bi-carbonate of soda in lieu of chalk or whiting as the source of the gas, with the further peculiarity that the carbonate is gradually admitted to the acid instead of the acid to the carbonate. The low price of bi-carbonate of soda, its larger yield of gas, and its affording a very soluble salt with sulphuric acid, are additional reasons for its use, when employed by the retail dealer or small manufacturer. According to the maker, the cost of charging a twelve-gallon fountain is from  $37\frac{1}{2}$  to 50 cts., or about three cents per gallon. The generator and fountains are calculated to resist considerably more pressure than they are subjected to, which is ordinarily about 200 lbs. to the square inch, or thirteen atmospheres, and this amount of gas pressure can be attained in fifteen or twenty minutes.

Figure 2 represents the apparatus with a single fountain, which is sufficient for the ordinary demand of a retail establishment; but where the consumption equals several fountains a day it is preferable to use that with two fountains, (fig. 1) which will enable the supply to be kept up without interruption. I is the fountain; D, the acid vessel; B, the receptacle for the soda salt; E, the washing vessel through which the gas is made to pass; A the handle of the sliding rod which opens the valve in the soda vessel and permits its descent on the acid; C, a large screw joint connecting the soda and acid compartments; II is an agitator to facilitate the

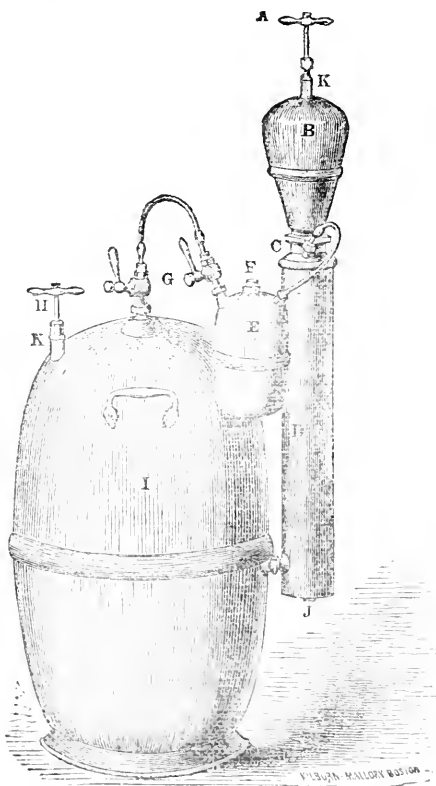


Fig. 2.

absorption of the gas; G is a stop-cock to control the flow of

gas; J, a screw to empty the residual sulphate of soda; K K are stuffing boxes to keep the joints tight.

In charging the apparatus, the operator proceeds as follows: Assuming that the fountain is of size No. 1, he pours into it 13 gallons of pure water. The soda vessel B is removed by unscrewing the joint C, and filled with bi-carbonate of soda, and at the same time three pints of sulphuric acid is poured into the cylinder D, when the soda vessel is replaced. The washer, E, is filled two-thirds full with water. The stop-cocks are now opened, and a portion of the soda allowed to fall into the acid vessel by depressing the handle, A, when the gas passes rapidly into the fountain through the washer, E. When all the soda has been decomposed, about 200 gallons of gas will have been evolved and condensed under great pressure. The whole operation takes from twenty to thirty minutes.

Figure 1 exhibits the double fountain and generator, which is capable of meeting the demand of the largest establishments, by charging one whilst the other is being emptied from the counter draught-pipe. There are three sizes of each kind of these machines, the cost varying from \$100 to \$200.\*

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#### AN EXPEDITIOUS MODE OF MAKING MERCURIAL OINTMENT.

BY JNO. M. MAISCH.

One of the most tedious works in the laboratory of an apothecary, is the preparation of mercurial ointment. A number of substances have been recommended to be added in small quantities for the purpose of extinguishing the mercury, and thus facilitating the work and abbreviating the process. But almost all of them have met with the opposition of physicians; some, such as sulphur, and rancid fat, on account of their chemically altering the mercury; others, like turpentine, render the ointment too irritating.

It is known that mercury, when pressed through leather, is minutely divided; in this state it may be readily mixed with the

\* This apparatus is manufactured by A. J. Morse, of New York, but the apparatus may be had from T. Morris Perot, Philadelphia; V. C. Price & Co., Buffalo; J. H. Reed & Co., Chicago; and A. Leitch & Co., St. Louis.

fat. To accomplish this end, I first triturate the metal with about one third of the fat and after this has been well mixed. add the remaining two thirds, but I have found it necessary to use a fat of greater consistence than the mixture prescribed by the Pharmacopœia. I have used 6 oz. of suet, melted together with 2 oz. of lard, and while still warm, pressed the mercury through chamois leather, sprinkling it over the surface of the fat and immediately incorporating it by trituration. After this portion is well mixed, some more mercury must be sprinkled over the fat, and trituration and addition of mercury alternately continued until the 24 oz. of the last are used ; then the ointment is of a soft, nearly semi-fluid consistence, and may be easily mixed with the remaining 16 oz. of lard without application of heat. If two persons can be employed at the same time, the process will be still shortened, one may constantly press the mercury through leather while the other is incorporating it with fat by trituration.

Mercurial ointment thus prepared is of a fine grayish blue color, and contains the mercury in a totally unaltered state, and free of any irritating admixture. On keeping, however, for some time, it darkens somewhat, doubtless from the oxidation of a part of the mercury to protoxide. Another advantage of preparing this ointment in the above manner consists in the separation of the oxides of the foreign metals, which more or less are present in all commercial mercury ; they do not penetrate the pores of the leather, and will be found at the end of the process a dark powder on the inside of the leather ; if advisable, its equivalent weight in mercury may be added to the ointment, to make it of the required strength.

*New York, January, 1856.*

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#### FURTHER REMARKS ON FLUID EXTRACT OF WILD CHERRY BARK, AND ON THE ALCOHOLIC EXTRACT AND WINE OF WILD CHERRY BARK.

By WILLIAM PROCTER, JR.

In the last number of this Journal (page 22,) a preparation was brought to the notice of the profession under the name of "Fluid Extract of Wild Cherry Bark." Sugar of milk or lactine was

recommended as the agent for preserving the solution of the active matter of the bark, because of the small quantity requisite to form a saturated solution, as well as because it was believed to be less likely to interfere with the functions of the stomach. But, in carrying out the idea in practice, the great bitterness and astringency of the fluid extract offered an objection to patients who have tried it, whilst when made with cane sugar, as suggested at page 23, it was found unobjectionable. I will, therefore, adopt the latter medium of preservation, and to make it clear to the reader, will repeat the formula thus modified:—

|                                                        |               |
|--------------------------------------------------------|---------------|
| Take of Wild Cherry bark, ( <i>Cerasus serotina</i> ), | 24 oz., Troy. |
| Sweet almonds,                                         | 3 “ “         |
| Pure granulated sugar,                                 | 36 “ “        |
| Alcohol, (88 per cent.)                                |               |
| Water, each a sufficient quantity.                     |               |

Macerate the powdered bark in two pints of alcohol for eight hours, introduce it into a percolator and pour on alcohol till five pints have passed, observing to regulate the passage of the liquid by a cork or stop-cock. Introduce the tincture into a capsule, (or distillatory apparatus, if the alcohol is to be regained,) and evaporate it to a syrupy consistence; add half a pint of water and again evaporate till the alcohol is entirely removed. Beat the almonds, without blanching, into a smooth paste with a little of the water, and then add sufficient to make the emulsion measure a pint and a half, and pour it in a quart bottle previously containing the solution of the extract of bark, cork it securely and agitate occasionally for 24 hours, so as to give time for the decomposition of the amygdaline. The mixture is then to be quickly expressed and filtered into a bottle containing the sugar, marked to hold three pints. Water should be added to the dregs, and they again expressed till sufficient filtered liquid is obtained to make the fluid extract measure three pints. The proportion of sugar, though less than that in syrup, is sufficient to preserve the preparation aided by the presence of the hydrocyanic acid.

As stated before, the dose is a teaspoonful, which is equivalent to a wineglassful of the officinal infusion:

*Alcoholic Extract of Wild Cherry Bark.*

[ Wild cherry bark yields to alcohol 22 per cent. of dry, deep

red, bitter, astringent extract, containing amygdaline. It is suggested that this extract may be rendered available for extemporaneous prescriptions in the following manner, so as to get the sedative power of the bark associated with all its tonic qualities.

Take of Alcoholic extract of wild cherry bark, two drms.

Emulsion of sweet almonds, half a pint.

Triturate the extract with a portion of the emulsion till dissolved, and then add the remainder and mix. This mixture should not be used for several hours after it is prepared.

The dose of this mixture should be a tablespoonful, and when desirable, its taste may be improved by the addition of sugar or syrup. It is, of course, understood that the coagulum formed by the action of the tannin of the extract with the albumen of the emulsion should remain in the mixture, which, therefore, is to be shaken before administration.

#### *Wine of Wild Cherry Bark.*

In the paper before alluded to, a method of making an alcoholic preparation of wild cherry bark of the strength of sherry wine, and, with the name of "Wine of Wild Cherry" was suggested.\* Although, in my estimation, a mixture of *pure* alcohol and water of the strength of wine is a better menstruum for wild cherry bark than wine itself, in view of the importance of permitting the amygdalinic reaction to be thoroughly effected in presence of a sufficient amount of water, yet there are those who deny the propriety of giving the name of wine to an unfermented liquid. To meet this difficulty the following formula is suggested:—

\*NOTE.—In referring to the wines of wild cherry bark, introduced to notice by B. J. Crew and others, the author remarked (page 21) that they "appear to be concentrated cold aqueous infusions, to which sufficient alcohol has been added to preserve them, say 20 per cent." In making this remark the author disclaims all intentional injustice to Mr. Crew, (who claims to use pure Sherry as the menstruum,) or others concerned. The idea intended, was, that they *were* aqueous solutions rendered permanent by 20 per cent. of alcohol as it existed in wine, rather than that they were made by adding pure alcohol. Unless water is present in sufficient quantity, the object of the preparation is defeated, and it is by no means certain that the *full* reaction between the emulsin and amygdalin can occur in presence of as much alcohol as exists in Sherry wine when this alone is used.

Take of Alcoholic extract from 24 oz. of wild

|                     |                     |
|---------------------|---------------------|
| cherry bark, about, | five and a half oz. |
| Sweet almonds,      | three ounces,       |
| Water,              | a pint,             |
| Sherry wine,        | two pints.          |

Beat the almonds with the water to a paste, rub down the extract with half a pint of the wine, and mix the two liquids in a bottle of the capacity of three pints, stop it closely and permit it to stand for three days with occasional agitation; then add the remainder of the wine, allow it to stand a week and filter. By this mode of proceeding, opportunity is afforded for the development of the hydrocyanic acid before the menstruum is made so alcoholic as to retard the reaction which favors its formation.

Thus made, wine of wild cherry bark is a transparent, wine-red liquid, having an astringent, bitter almond taste and odor, much less agreeable than the syrup and about the same strength.

The dose of this preparation is a teaspoonful.

## PHYSICIANS AND PHARMACEUTISTS AND THEIR RELATIONS.

By J. M. MAISCH.

[Continued from page 25.]

The vocation of the physician is certainly a noble and exalted one; it wants a man, in the fullest sense of the word, to visit the sick room, to witness the sufferings of human beings in their various forms; to distribute comfort and help. But when pretenders attempt to make that high calling their own, we really do not know whether we should get angry at their deceitfulness or pity the credulity of the mass. If an adventurer of some kind or another finds that he cannot succeed, or does not make money fast enough, what is easier for him than to rent a room, calling it an office, and to put a sign out on which you may read in large characters a name with M. D. affixed to it? The newspapers open their advertising columns to any one who has money to pay for the advertisement. And what advertisements these often are! There you may find enumerated horrid diseases that are, and that have never been dreamed of, that



are the scourge of mankind, slaying thousands; and that never demanded a single victim, because they only exist in the brain of the newly inaugurated doctor and in *his* medical dictionary. There you may find descriptions of diseases which might just as well serve to explain the symptoms of a nervous headache, an over-filled stomach, or of consumption, or some other lingering disease. The evils perpetrated by such quacks are really uncountable; it is not only their misunderstanding diseases of the patients who place confidence in them; not only the danger arising from over-doses of medicines, the proper doses of which they cannot recollect or adjust to a peculiar case, the constitution, age, &c., of the patient; but it is, in a great degree, also, the neglect or the fear of doing anything at all, that may be productive of the worst consequences. We know a case that recently occurred, and is a striking example of a treatment of the latter sort. A young man suffering from general debility and impotency produced by excesses, called on a self-styled physician who liberally patronizes the press, having sometimes two or three advertisements at the same time in a number of the newspapers. The doctor took to electricity to cure his patient, and gave him a wash for strengthening the organs, into which he had previously put the *one* pole of his electric battery, and which, on examination, as the physician assured us under whose treatment he afterwards placed himself, proved to be nothing but clear water. That the doctor demanded good pay for his professional (?) services need not be said.

Such impostors know how to do "business"—how to entice the unfortunate sick to seek their advice. Besides the enumeration and description of diseases, they promise to cure infallibly and radically. They herald their own success by announcing the number of patients cured annually, and of those who were recommended to them by the first physicians of the country; they trumpet their skill by publishing the thanks of cured patients, which are manufactured by wholesale; they give proof of their modesty by denouncing all quacks, and by abusing all those who copy their advertisements in order to deceive the public; and they are liberal and charitable, for they profess to attend to poor people free of charge, and to pay particular attention to

those recommended to them by other physicians. It is astonishing how bold a face they are able to put on.

But there is another set of quacks known better to the public than the class before mentioned; we mean the numerous proprietors and originators of patent medicines. There seems to be a perfect mania all over the country for "inventing" and introducing new, never heard of nostrums, which, to make them valuable, are often called such barbarous names as to render a proper pronounciation highly difficult. We will not attempt to depict the means used for introducing and keeping them before the public, to expose the folly of an attempt to cure lots of diseases by one and the same remedy, or to reduce the whole pharmacopœia to a half dozen preparations which would cure any disease the human frame is subject to. A number of these nostrums have gone to the dead, and we sincerely wish all the living ones may soon follow them. We could not suppress a pitying smile the other day, on reading an article written expressly for the defence of patent medicines. The manufacturer of secret medicines, it was said, certainly put something of efficacy in it, but not in sufficient quantity to do harm, even after a continuance for some time; he pays large amounts to the press for advertising, printing, &c.; in short, he is a benefactor of mankind. The nostrums are calculated to be family medicines, and as there are nostrums that cure every thing, and hundreds for each class of the different diseases, the attendance of a physician is quite unnecessary; one quack of this sort cures more patients in a week than many physicians in a year. Their medicine is "recommended by the faculty," and their boldness, of course, is the best proof of its efficacy, notwithstanding the promulgation of a volume of testimonials from persons that sometimes never lived, and the numerous cases in which the nostrum had no effect at all, or made the sickness worse than ever.

The question of quackery in its two forms is certainly an important one, and the proper way for its suppression is still open for discussion. The wealth accumulated by the shrewd manufacturer; the money they can spend for hiring an unscrupulous press, or using the advertising space of the honest and conscientious press; the position in society attained by some quacks; the fame of some as practitioners before turning to quackery; the

standing of others as members of scientific societies or as editors of general scientific or medical journals; the usage of some physicians, otherwise opponents to quackery, to prescribe nostrums, either from a knowledge of their composition or from faith in the authors of the same; the readiness of even high-standing and learned men to give recommendations for the use of nostrums; but, above all, the thoughtlessness of those who wish to save the expenditure of money for the services of physicians, and still have to pay several times that amount for the recommended merchandize of the quacks; all these circumstances combined tend to keep the secret medicines afloat, and to add new ones almost daily to the old stuff.

To put down quackery, to expose it and reduce it to nothing, requires the efforts of all true hearted men, and especially of physicians and pharmacutists. We know it cannot be overcome all at once, but must fall by degrees, and we have no doubt it will. When questioned about the efficacy of quack medicines, we should not hesitate to state our opinion of nostrums in general, to refuse any sort of recommendation above—some are said to have derived benefit from it;—but to recommend the afflicted to seek the advice of some physician in whose knowledge and skill we can place confidence. This, we think, should be the beginning; if necessary, an explanation why the same medicine cannot answer for so many diseases or always for the same disease, which is modified by the constitution, the sex, habits, manner of living, &c. Declining on the part of apothecaries to keep quack medicines for sale has, in most cases, been rewarded by the entire confidence of the practising physician and a corresponding increase of the prescription—the legitimate pharmaceutical business. So much we are assured of, that if medical societies would take a bold stand against nostrums of any sort, and act in conjunction with the various pharmaceutical societies, to remedy this evil would then be much easier. As yet the voices in opposition to quackery, and especially the nostrum quackery, are thinly scattered throughout the country; but seldom the editor of a newspaper ventures to publish an article opposed to it. The harmonious action of the practising physician and the dispensing pharmacist is necessary, to be productive of much good; their recompense would be the increased confidence of the public.

## GLEANINGS—PHARMACEUTICAL, MEDICAL AND CHEMICAL.

*Purification of Honey.*—According to A. Hoffman, (*Pharm. Jour.*) tannin clarifies honey by acting chemically on a gelatinous matter, which is present in it. Sometimes, owing to a deficiency of this matter, honey cannot be clarified with tannin, when the author recommends the use of gelatin, thus—28 pounds of honey is dissolved in twice its weight of water and heated to boiling, three drachms of gelatin dissolved in nine drachms of water is then added, and lastly, a solution of one drachm of tannin in water; the mixture is well stirred and kept hot for about an hour. About seven-eighths may be decanted and the remainder filtered through flannel; after which, the clear solution is evaporated.

*Decoloration of Tannin.*—F. Kummell states that tannin may be decolorized, if its solution in a mixture of ether and alcohol is passed through animal charcoal. In preparing tannin by percolation, he places a layer of recently ignited animal charcoal immediately above the cotton plug. The product thus obtained has scarcely any yellow color, and the solution in water, ether or alcohol is nearly colorless. Animal charcoal cannot be used when the tannin is extracted with ether alone, on account of the viscid character of the solution, nor did attempts to decolorize an aqueous solution of tannin give a favorable result.

*New Hæmostatic.*—Dr. Butler, of Ohio, recommends a scruple of tannic acid to be dissolved in an ounce of elixir of vitriol, and 15 drops to be given as a dose—in menorrhagia, etc.

*Strawberry Leaves as a substitute for Tea.*—M. Kletzinsky, of Vienna, asserts that the leaves of the wild strawberry, (*Fragaria vesca*), gathered after the ripening of the fruit, afford an infusion possessed of agreeable properties. The leaves may be dried in the sun or in heated pans. The infusion is greenish and slightly astringent, and somewhat like that of the China plant. The infusion is miscible with milk without coagulation, possesses the same diaphoretic and diuretic properties as tea, and is slightly excitant.—(*Boston Journal*.)

*Phosphorus in Wine.*—Dr. Kletzinsky, (*Virg. Med. & Surg. Jour.*) believes that much of the value of wine as a therapeutical agent is owing to the phosphorus it contains, which exerts its power in the reparation of the nervous, muscular and osseous

systems. He says all good wines contain phosphoric salts in different quantities, and it is more important to determine the relative amounts of this powerful stimulant than to ascertain the proportions of alcohol, extractive matter, &c., as we may expect the most positive benefits from introducing it into the system in all adynamic diseases, ricketts, scrofula, &c., as well as in slow convalescences and many of the chronic affections.

According to the author, the preparation of phosphorus in 1000 parts of various wines is for Tokay 5, Malaga 4, Maderia and Sherry  $3\frac{3}{4}$ , Santorina  $3\frac{1}{3}$ , Cyprus  $3\frac{1}{4}$ , Chateau Lafitte 2, Rhenish wines  $1\frac{1}{2}$ , Champagne  $1\frac{1}{4}$ . [As the phosphorus is in the form of phosphates, why should they be more effective in this form than in that much more abundant source of them, the cereal grains? —EDITOR.]

*Deuto-chloro-bromide of Mercury.*—This new compound of mercury has been suggested as a therapeutical agent. (*Jour. de Chim. Med.*, Dec. 1855.) It is prepared by putting a drachm of chloride of bromine in a half pint flask with three fluidounces of water, and then adding hydro-sublimed calomel in small portions with agitation, until the solution becomes colorless. It is then filtered and evaporated to one-third, and the salt crystallizes as the solution cools. The mother water yields more of the salt by evaporation.

Deuto-chloro-bromide of mercury crystallizes in white flattened needles, is soluble in water and alcohol, has an acrid and caustic taste, loses some water of crystallization by exposure to the air, is volatile in close vessels. It forms, with lime water, a chestnut brown precipitate, which distinguishes it from corrosive sublimate.

*Gutta Percha Caustics.*—Dr. Maunoury, of Chartres, (*Reper. Pharm.*) recommends the use of gutta percha as a means of rendering caustics more manageable. The following is his process for preparing chloride of zinc.

Take of Chloride of zinc,                      two parts,  
Gutta percha, in powder,                      one part.

Introduce this mixture into a tube or porcelain dish, and heat gently over an alcohol lamp. Under the influence of heat the gutta percha softens, the particles cohere in a spongy mass, which retains the powdered chloride of zinc, and may be made into any convenient shape, which it retains on cooling. This

gutta percha caustic has the following advantages:—1st, It is not alterable in the tissues. 2d, It retains its consistence and flexibility. 3d, It can be inserted easily, owing to its pliability, into the natural passages, as the urethra and nostrils, and into those of fistulas. 4th, The surgeon can form it, at will, into any shape required, as in plates, threads, bougies, tablets, &c. 5th, And lastly, it has the valuable advantage of permitting, by its porosity, the exudation of the caustic, and thus opening a free passage for the result of the action of the caustic on the tissues.

Besides chloride of zinc, Dr. Maunoury has applied, in this way, caustic potassa, arsenious acid, iodide of lead, cinabar, tartar emetic, etc.

*Nux Vomica as an Aperient.*—Among the conditions over which nux vomica, and its active principle, strychnia, possess most useful powers, is that of habitual constipation, from muscular atony of the intestinal tube. At the City Hospital for Diseases of the Chest, we observe that Dr. Peacock and Dr. Andrew Clark are both in the habit of frequently resorting to it for this purpose. It is generally given in combination with the compound rhubarb pill, and in doses of the extract of from a sixth to half a grain. Of itself it can, perhaps, scarcely be deemed an aperient—that is, it does not so much excite peristaltic action, as supply tone to the weakened muscular coat, by which it is enabled to respond efficiently to other irritants. Hence the need for combination with rhubarb, aloes, or some similar drug. Dr. Peacock mentioned to us a case under his care in St. Thomas's Hospital, in which a man of feeble intellect, and torpid nervous system generally, had derived great benefit from its employment. At first, the bowels were obstinately costive, and lavements produced no action; but since the use of the nux vomica (twice daily, gr. ss.) they have so far increased in power and susceptibility, that simple injections are quite sufficient, and procure all the action that is necessary.—*London Med. Times and Gaz.*

*New Filter.*—Dublanc recommends for rapid filtration, a wire frame made in the shape of a funnel of tinned or silver wire, in such a manner that the alternate folds of a ribbed filter fit upon the wires. A second wire frame fitting against the other folds, is placed inside for the purpose of holding the filter in its place.—*London Phar. Jour. from Dingler's Polytechnisches Journal.*

VERATRIA AND ACONITIA CONSIDERED IN A TOXICOLOGICAL  
AND PHARMACO-DYNAMICAL POINT OF VIEW,

By DR. PRAAG.

The author has studied the action of veratria on vertebrated animals, particularly on the mammalia, and also on birds, reptiles and fish. He has analyzed with care the symptoms observed, in order to learn the action of this medicine on different systems and organic apparatus. Recapitulating afterwards, he deduces certain general propositions in regard to the physiological action of veratria which he found in a great many points analogous to that of delphinia.

The following is the author's summary of the properties of this substance :

The respiration and circulation become less active ; the muscles lose their tension ; the irritability of a great many of the nerves, particularly of the peripheral cutaneous nerves, is considerably abated. On the contrary, very small doses suffice to cause vomiting and sometimes diarrhœa. More frequently, however, the vomiting does not occur but with strong doses. The urinary secretion is not much augmented ; that of the saliva is sensibly increased. All the symptoms are preceded by a certain excitation. The period of excitation is characterized by accelerated respiration, frequent pulse, spasmodic muscular tension, and very great nervous excitability. Death appears to proceed from a paralysis of the spinal marrow.

The author has also instituted some experiments on the human economy, and found its action the same as on animals.

In the employment of veratria we should keep in view its depressing influence on the respiration and circulation, perhaps also its property of diminishing muscular irritability. It ought, therefore, to be efficacious in febrile affections accompanied by muscular tension, as for example, in typhus with "erithrism," in rheumatic fever, scarlatina, traumatic fever, strangulated hernia, and acute peritonitis, under the condition that the patients have not been too much debilitated by other causes. It will be appropriate, also, owing to its action on the pulse and respiratory function, to render service in pneumonia, pleurisy, and diseases of the heart clearly inflammatory.

The author concludes his essay by a review of the diseases in which he has employed veratria.

*Aconitia.* The author has experimented with this alkaloid on dogs, rabbits, birds, frogs and fish.

*Aconitia* slackens respiration, paralyzes the system of voluntary muscles and deprives the cerebral nerves of their power of action; it appears to be nearly without influence on the circulation, or at least it renders this very variable and irregular. It produces a dilatation of the pupil, and an augmentation of the saliva, whilst the urine does not appear to be affected. It occasions in man a painful sensation in the cheeks, upper jaw and forehead, and causes death by asphyxia. The author says but little in regard to the diseases in which it should be used. It ought certainly to be useful in delirium and mania arising from excitement. Perhaps it will be indicated in "tonic or clonic" cramp, in tetanus, trismus, chorea, and spasmodic asthma of a nervous type.

The largest dose given by the author without danger was three-quarters of a grain (0.0488 gramme.\*)

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## NEW PROCESS FOR REDUCING OXIDE OF IRON BY MEANS OF CARBONIC OXIDE.

By M. EUGENE FEGUEX.

Reduced iron, quite lately scarcely known as a product of the laboratory, has become, since the important researches of M. Quévenne, a therapeutic agent of great value; because of its perfect insipidity, easy tolerance by the stomach, and prompt assimilation, advantages which no other ferruginous preparation can dispute with it.

It is ordinarily prepared by reducing one of the oxides of iron by means of hydrogen, an expensive process, since it requires

\*[NOTE.—Either there is some mistake in the figures used at page 164 of the *Repertoire de Pharmacie*, for 1855, from which we translate this article, or else the *aconitia* used by Dr. Praag was impure, as, in fact, much of the commercial *aconitia* is known to be. For this reason we feel best satisfied to caution our medical readers, as in a much more minute dose its power has been manifested in other hands.—EDITOR AM. JOUR. PHARM.]



the employment of sulphuric acid and zinc, which are more costly than those used for preparing carbonic oxide.

The apparatus that I have employed in my experiments is composed of a metallic [iron] tube placed horizontally in a furnace in such a manner as to be easily surrounded by burning charcoal. Two-thirds of this tube is filled with oxide of iron in troches, the other third with charcoal of poplar or willow in small fragments which are prevented from mixing with the oxide by a piece of iron wire gauze. The end of the tube containing the carbon is connected with a generator of carbonic acid, obtained by means of marble and muriatic acid, the gas before entering the reduction tube is washed in a bottle containing sulphuric acid, which serves to regulate the evolution of the gas. The other end of the tube is furnished with a tube dipping into a vessel of mercury through which the resulting gas escapes.

The apparatus being mounted, the whole of the reduction tube is carried to a red heat; when the carbonic acid in passing the red hot carbon is deoxidized and converted into carbonic oxide, which by its contact with the oxide of iron becomes again carbonic acid. By this process the iron is reduced much more certainly and a great deal more promptly than by hydrogen, because the affinity of carbonic oxide for oxygen is much stronger than that of hydrogen for oxygen, a fact demonstrated by M. Henry in a conclusive manner, in mixing hydrogen, oxygen and carbonic acid in an eudiometer and passing an electric spark through the mixture when the carbonic oxide had become carbonic acid.

Besides the economy of time, this process gives also a great advantage in reference to the cheapness of the materials used. Marble is of no value, muriatic not much dearer than sulphuric acid, whilst the carbonic acid which flows from the apparatus, if it is not used to saturate the carbonated alkalies, can be conducted by means of a caoutchouc tube to the generating apparatus.

Instead of the subcarbonate of iron, which, notwithstanding the washing, retains always sulphate of soda, I prefer to employ the oxide of iron obtained by precipitating the chloride by ammonia, because by calcination it can be totally deprived of the ammoniacal salt admixed with the oxide.—*Repertoire de Pharm. from Journal des Connaissances Med.*

## ON TINCTURE OF ACETATE OF COPPER.

By DR. RADEMACHER.

|                             |           |
|-----------------------------|-----------|
| Take of Sulphate of copper, | 90 parts. |
| Acetate of lead,            | 115 “     |

Triturate them till liquified, add 530 parts of distilled water, and boil in a copper vessel; when cold add 400 parts of alcohol, and leave in contact during four weeks with frequent agitation.

The following is the manner of using this tincture in *acute fevers* :—

|                                                     |          |
|-----------------------------------------------------|----------|
| Take of Rademacher's tincture of acetate of copper, | 6 parts. |
| Gum tragacanth,                                     | 4 “      |
| Cinnamon water,                                     | 30 “     |
| Distilled water,                                    | 220 “    |

A table spoonful to be given every hour. This medicine does not produce either nausea or vomiting.

If copper is administered in proper doses it does not affect the intestinal canal, it acts in a gentle, very peculiar manner unlike any other medicine. It is a substance that assimilates very well in the human organism. Copper is equally advantageous in acute and chronic diseases, both in those which consist peculiarly in a single affection of the organism, as well as those which have their origin in a primitive constitutional disease, and an idiopathic affection of an organ.—*Repertoire de Pharmacie*, Dec., 1855.

## ON THE PREPARATION OF CONCENTRATED ALCOHOL.

By M. EUGENE FEGEUX.

Alcohol of 40° (Cartier), is a reagent which the pharmacist often needs in the analyses he is called to make. The following is an economical mode of preparation, which always gives excellent results :—

Take one kilogramme (2 lb 3 oz.) of carbonate of potash of commerce, one kilogramme of quicklime; mix with three litres of alcohol of 36°, putting the whole in the boiler of an alembic; and commence the distillation, being careful to test the first product with the alcoholmetre. It seldom happens that the first portion is as strong as 40°, and it is necessary to return this to

the still until the proper degree of concentration is attained; then after each litre ( $2\frac{1}{10}$  pints) that passes, add to the contents of the alembic a litre of ordinary alcohol, and continue the process till the product ceases to be of the strength of  $40^\circ$ . Then after each litre of alcohol that distills add half a litre of water. By this process, with these quantities of quicklime and carbonate of potassa, and 18 litres of alcohol of  $36^\circ$ , there will be obtained 12 litres of alcohol of  $40^\circ$ , 4 litres of alcohol at  $38^\circ$ ,  $36^\circ$ ,  $32^\circ$  and  $30^\circ$  respectively, and two and a half litres between  $26^\circ$  and  $22^\circ$ .

This process is very economical, since there is no loss of alcohol, and the mixture of lime and potash can afterwards be used in the preparation of caustic potash.

If all the alcohol is added at once, without water, only eight litres of alcohol of  $40^\circ$  and seven litres of from  $38^\circ$  to  $22^\circ$  are obtained, which arises from the retentive power of the mixture in the still and the loss, in distillation, together.

These results have been confirmed by eight successive trials. —*Journ. de Pharm.*, Jan., 1856, from *Jour. des Connais. Med.*

## NEW PROCESS OF MANUFACTURING SODA AND SULPHURIC ACID.

By M. JEROME NICKLES.

In place of a dull and imperfect review of the “Universal Exposition,” it seems better to describe a new process, yet unpublished, which promises to change one of the most important industries of the age.

Notwithstanding the improvements in the manufacture of artificial soda, Leblanc’s process is still continued in practice with a few changes, furnishing hence very large residues of oxysulphuret of calcium and preventing the sulphur of the sulphuric acid from serving several times.

This is owing to the great degree of perfection to which the manufacture of sulphuric acid is now carried; the very perfect condensation of the hydrochloric acid and its applications; the low price of the materials used, the lime and combustibles, and the simplicity of the apparatus required for transforming the sulphate of soda into the carbonate; and finally the fact that

the manufacture of sulphuric acid in connection with that of artificial soda, constitutes a complete and symmetrical work in which nearly all the products are utilized. Improvements that have been proposed have not been adopted, either because they derange this symmetry of operations, or else because of the cost of introducing them, or they are adapted only to certain circumstances or localities. The process now brought forward escapes these objections. It is by M. Emile Kopp, formerly Professor in the School of Pharmacy of Strasburg, and has already been put into practice in a manufactory in Lancashire, England, at Church near Manchester.

The process consists in decomposing sulphate of soda by a mixture of oxyd of iron and carbon, and treating the product of the reaction in the way described below. The proportions employed are as follows :—

|                                                |                |
|------------------------------------------------|----------------|
| Sulphate of Soda ( $\text{SO}^3 \text{NaO}$ ), | 125 kilograms. |
| Peroxyd of Iron ( $\text{Fe}^2\text{O}^3$ ),   | 80 “           |
| Carbon,                                        | 55 “           |

The sulphate of soda may without inconvenience contain some common salt ; but then the oxyd of iron and carbon should be proportioned only to the pure and dry sulphate of soda present in the crude material. A furnace for calcination is used, taking care to break up the larger lumps. The oxyd of iron should be weighed dry and in a fine powder, and should be as pure as possible.

For the first operation, instead of the artificial or native peroxyd of iron, the carbonate (spathic iron) may be employed, or the magnetic oxyd, or even iron filings. But in the case of the last, the quantity of carbon should be diminished, since metallic iron acts as a reducer of the sulphate of soda. It will be soon seen, that whatever the compound of iron used, there will be shortly only the peroxyd, and this is regenerated constantly in the operation.

The mixture of sulphate of soda and oxyd of iron which is obtained as a residuc in the process of decomposing common salt by the sulphate of iron, is readily adapted to Kopp's process, since, if the proportions are correctly taken, it is only necessary to add the requisite quantity of carbon. This carbon may be coke, or any other organic reducing substance ; but the quantity

will vary with its reducing properties. In England they use ordinary coal.

The amount of oxyd of iron must be such as will combine with all the sulphur of the sulphate of soda to form  $SFe$ . For 9 of the pure and dry sulphate, not less than 5 parts of the pure and dry oxyd of iron are required; a small excess of oxyd of iron is advantageous. If the oxyd contains lime it should be removed by treating with hydrochloric acid and washing; for the lime would give rise to  $CaS$ , then  $CaO SO^3$ , and then again  $CaS$ , increasing unnecessarily the volume of material under manipulation, and causing a loss of carbon and heat. The carbon should not be in excess, as it favors the formation of sulphuret of sodium, and because also of this excess remaining with the sulphuret of iron, will afterwards afford, in the roasting of the latter, some sulphurous acid mixed with the carbonic acid. The proportion of carbon should hence be diminished until there is a minute proportion of the sulphate of soda left undecomposed in the blocks of crude ferruginous soda.

The quantity of the mixture that may be put into the calcining furnace at one time will depend of course on its size; but the amount may be full twice as large as in the Leblanc process, since the ferruginous soda works more easily than the ordinary soda.

For *calcination*, the furnace may be similar to that for the calcareous soda; but to economise heat, there had better be two or three stories, the lowest nearest the fire. The furnace then holds three charges at once, which are moved downward in succession, another being added above when one is taken out below.

The treatment in the furnace is like that for the crude calcareous soda, and the phenomena are nearly the same. The whole softens, becoming pasty, and the fluid as the action goes on disengages a yellow flame; then the action, which has been very bright, diminishes as the flames become less abundant, and when the mass is homogeneous, it is finished. It is then removed immediately from the furnace, being run while still red into a wagon on wheels in which it cools and solidifies, having been partly covered for security from contact with the air. When cold, it is a block in the form of a parallelopiped, blackish in color and more or less porous, very hard and of considerable den-

sity. The surface has a coppery reflection. In fracture, it has a uniform aspect, a crystalline texture, and a greenish and brilliant metallic reflection.

It now remains to treat this crude ferruginous soda, so as to draw off on one side the soluble carbonate of soda, and on the other the insoluble sulphuret of iron. The method used with the crude calcareous soda would give only bad results. In fact, the mass expands on the action of water, becomes very voluminous, difficult to wash, and affords a liquid containing much caustic soda and also sulphuret of sodium.

The washing is, however, easy after a preparatory operation which M. Kopp calls "*délitiation*." It is as follows: The crude ferruginous soda left exposed to the air under a shed, undergoes a change, which is the more rapid if the air be charged with moisture and carbonic acid. The lustre fades, the block breaks to pieces and becomes covered with an abundant blackish pulverulent material; and this goes on so rapidly that in a few hours it is reduced to a hillock of this powdered substance.

This change is due to the absorption of oxygen, water and carbonic acid, while heat is given out, which, without care, may rise even to ignition, in which case the powder has a reddish aspect, and contains sulphate of soda with 10 to 15 per cent. of carbonate of iron and a little sulphuret. But this high heat is prevented by removing the powder from the surface as it accumulates, so as to leave the interior open to the air and carbonic acid. Water then separates from it carbonate of soda, and the residue consists principally of sulphuret of iron.

M. Kopp aids the process by an artificial supply of cold and moist carbonic acid, as the action of the air is very slow. This process, which he calls "*carbonation*," is as follows: In a chamber, at a height of two and a half meters, a grating of cast-iron is placed, whose spaces are one and a half centimetres. The earth is removed to about a depth of one meter. The roof of the chamber is about two and a half meters above the grating. The walls have numerous holes for the passage and circulation of the air. In the lower part, the carbonic acid is introduced. The blocks of crude ferruginous soda are placed on the grating, on their small face; and as they crumble, the powder falls below where it encounters and rapidly absorbs the carbonic acid. A

block of 250 kil. requires as a maximum a space of a meter, and the process is complete in eight or ten days. Consequently a space of 20 meters by 10, will answer for 200 blocks, which will furnish more than 50,000 kilograms in ten days, equivalent to 5000 kilograms a day. Ten metric quintals of coke, worth in England 7 to 8 francs, suffices to carbonate 90 to 100 quintals of dry and pure carbonate of soda.

The material when ready for lixiviation should be pulverulent, fine, gray or blackish-gray in color, and without hard fragments. It is well to use a coarse seive to remove the stony matters present, retaining them to be lixivated apart, taking care to reject the insoluble residue. The sifted powder forms with water a lye which is clear in five or ten minutes, holding a heavy deposit, with often a coppery reflection.

The *lixiviation* should be carried on methodically either by filtration or decantation, by means of warm water at  $30^{\circ}$  to  $40^{\circ}$  C. Weak solutions are used in lixiviating new portions of the powder.

When the exterior temperature is not too high, the solutions furnish after 24 to 48 hours, without concentration, an abundance of finely crystallized limpid carbonate of soda. By dropping in a bit of dry carbonate of soda, the crystallization is often hastened.

The residue, principally sulphuret of iron, is received on a filter or porous surface. In this state, it alters slowly. It is dried by heat or pressure and made into a brick. It is so combustible that it will take fire below  $100^{\circ}$  C., when the drying is nearly complete. This sulphuret affords the sulphur for making sulphuric acid, in which change, the iron becomes peroxyd and is then ready to be used again. It is thus seen that a single proportion of sulphur may be utilized a large number of times, in transforming common salt into sulphate of soda. But the oxyd of iron gradually becomes impregnated with the impurities of the common salt, the sulphate of soda and coal, and it must then be renewed; yet it may be used when it contains even 40 per cent. of impurities.

When the oxyd of iron contains sulphate of soda, it is necessary to change the proportions of the mixture for the crude

soda. It has been found by experiment that the proportions most convenient are—

Sulphate of soda, . . . . . 125 kilograms.

Peroxyd of iron, proceeding from the sulphuret, 140 “

Carbon, . . . . . 70 to 75 “

and these proportions should be preserved for the subsequent operations, as long as the rotation of the same oxyd and same sulphuret of iron continues.

The same process may be used with the oxyds of manganese and zinc, but with greater difficulties, as the “délitiation” and “carbonation” in these cases are more complicated.

*Paris, Oct. 30th, 1855.*

*Silliman's Journ., Jan., 1856.*

#### REPORT OF A COMMITTEE TO CONSIDER AND REPORT ON THE SUBJECT OF HOME ADULTERATIONS.

The subject of home adulterations of drugs naturally attracted the attention of the community, and especially of pharmacéiens and physicians, in connexion with that of the foreign, to which we have applied so stringent a law.

No doubt the sophistication of drugs is as well understood in this country as on the other side of the Atlantic, and that if we could apply a remedy as general in its application, we should detect an amount equally astonishing. This is one of the arguments used by the opponents of the drug law, that medicines can be as readily adulterated here as abroad; but we contend that this is no argument against shutting out foreign adulteration, and we hope some of these days to put a stop to the evil at home. The precise method of doing this is not yet apparent, neither is it within the scope of the duties of this Committee to suggest a remedy. One of the results of the different reports from time to time upon this subject, will be to call the attention of the community to the subject, and create a public sentiment that shall demand purer and better medicines when needed, thus drawing the necessary discrimination between the qualities of them when offered either in packages or at retail.

The Committee do not design, at present, a full report, as there are still under their observation and that of others who have aided them in this matter, such articles as are usually met with.



Some are of more, some of less importance, all, however, sufficiently so, we think, to merit attention and remark. They are mostly articles that have been found on sale in the interior towns and cities, purchased at the cities East, where most of the wholesaleing is done. A few instances may be noticed:—

*Balsam Peru* has been met with, possessing none of the characteristics of genuine balsam except in color and consistency, and upon analysis affording no cinnamic acid.

*Pulv. Capsicum*.—The sample examined had a brick dust color, little pungency, and filled with yellow specks and strong odor of *turmeric*. It was a mixture of tumeric and American capsicum, and, of course, almost inert.

*Castor* is found with the follicles filled with saw dust to half the weight of the castor.

*Opium*.—Since the circular of the Secretary of the Treasury fixing a per centage of morphia for this drug, a more uniform quality has been found in market; but a great many samples have been observed the past season with foreign substances, most commonly lead, inserted in the lumps, in some instances equal to 20 per cent. of the weight of the mass. We are of the opinion that this was done abroad, and probably at the port whence shipped. The different examiners should seek to detect this fraud before passing it.

*Musk* in pod has been observed loaded in the same way, to the amount of 20 grains in a single pod.

*The Essential Oils* are largely adulterated in this country.

*Oil of Peppermint* sometimes contains 50 per cent. of alcohol. *Oil of Rosemary* is adulterated largely with turpentine, and, in short, the whole class are shamefully sophisticated.

*Otto of Rose* in the same class.

*Cream of Tartar*, adulterated with carbonate of lime, some samples to the extent of 33 per cent., others in less proportion. Sul. potash is also used for this purpose, and alum largely. Of six specimens examined by a gentleman of New York city, purchased at various shops, but *one* was found pure, some of them being adulterated 30 per cent. The same gentleman says, in reply to our inquiries, that from twenty-two specimens or samples of essential oils, fourteen were found to contain turpentine and other impurities. The same gentleman reports samples of powdered opium adulterated 50 per cent.

*Cod Liver Oil.*—All kinds of fish oil may be found neatly bottled and carefully labelled as the genuine article.

*Sulphate of Quinine.*—Samples have been detected with the old adulteration of mannite, and one gentleman reports quinine mixed up with fine picked raw cotton, adding to the bulk so as to fill the vial without using the requisite quantity of this valuable chemical.

Ipecacuanha in powder and Jalap in powder, each mixed with spurious matter, and English rhubarb in powder, put up for fine powdered Turkey, are not uncommon in all the markets.

Of crude materials, *Nitre*, or Saltpetre is one of the most commonly sophisticated, being adulterated with common salt and nitrate of soda largely.

These are some of the reports made to us, all from reliable sources.

The Committee have endeavored to establish points of observation in different sections of the United States, and, as far as possible, to obtain the names of houses from whom these various sophistications have been obtained. Such information they deem it best to withhold from publication at present, lest they might do injustice to parties ignorantly sending out such drugs; but they also intend from time to time to compare notes, and when satisfied of continued practices of this kind, will report such names to the Association.

In the meantime, they cannot too strongly urge retail apothecaries, especially, to be cautious of whom and what quality of medicines they purchase. It is to the dispensing apothecary that medical men and the community look for such medicines as are pure, not only "good of their kind," but of the best kind.

C. B. GUTHRIE,

GEO. D. COGGESHALL,

E. S. WAYNE,

A. J. MATTHEWS.

*Proceed. of Amer. Pharm. Association, 1855.*

THE USEFUL PRODUCTS OF THE NATURAL ORDER  
PALMACEÆ.

The natural order Palmaceæ comprises some of the most beautiful plants in the world, and is not only remarkable for the majestic forms of its species, and their position at the head of the endogenous division of the vegetable kingdom, but also for the great value of their products to the human family. It is this latest quality, and not the botanical history of the order, which formed the subject of Mr. Archer's lecture. He based his remarks on the system proposed by the late Mr. William Griffiths, in his work on *The Palms of British India*, though he would have preferred the arrangement of Martius, had he been able to procure his work. The first division is that of the *Calaminæ*, which comprises several most useful genera. *Zalacca*, an Indian genus, yields the beautiful sticks called Malacca canes; these are the thin stems of the *Z. edulis*; when first gathered, they are of a light yellow color, and in order to produce the much admired brown color, they are smoked, by being suspended over wood fires.

*Calamus* is another Indian genus, several of which yield useful products. The most valuable is the long slender stem of the *C. rotang*, or the rattan cane of commerce, so extensively used in this country for chair bottoms, &c. It is applied to an amazing number of useful purposes in India and China, not the least important of which is that of tying up packages for transport to distant countries, such bandages having an advantage which none of the ordinary fibrous materials possess, being almost imperishable, and consequently not rotted by exposure to damp in the vessel's hold. This arises from the large quantity of oil which these plants secrete and deposit on the outside of their stems. Dragon's blood is yielded by *Calamus Draco*, and perhaps other species. It is a peculiar resinous secretion of the fruit.

Many palms of this division yield sago. This farina is prepared from the trunks of these palms, which are of a gigantic stature, and as much as from 500 to 800 pounds are sometimes yielded by one tree.

*Raphia* is a genus of magnificent South American palms, luxuriating in the rich plains of the Amazon. One species, *N.*

tædigera, is a glorious object, the enormous plume of primate feathers rising gracefully from the top of its straight cylindrical stem, is often from sixty to seventy feet in height. It is a great blessing to the natives, who make from the hard outer portion of the petioles baskets, window blinds, &c. From the softer internal portion they make shutters, doors, boxes, and almost every other domestic article, which in other countries would be made of harder wood. The entomologists who explore its habitat are glad to get the pith for their insect boxes, in which it takes the place of cork.

*Coryphinae*, the second division, is typified by the genus *Corypha*, which yields numerous valuable materials. The genus *Chamærops* is the only genus which extends so far north as Europe and North America; in the former continent it is represented by *C. humilis*, which grows in the extreme south of Europe, and in the latter by *C. palmetto*, and is found in lat.  $34^{\circ}$ — $36^{\circ}$ . The next genus, *Phoenix*, is one of the most useful of the order; *P. dactylifera*, is the well known date-bearing palm, the fruit of which is the chief food of many tribes of Asia and Africa. It has been cultivated from a very early period, and rewards the careful cultivator with improved varieties. In a letter addressed to Lord Palmerston by Dr. Richardson, on the dates of Fezzan, he states, that nineteen-twentieths of the population of Fezzan live on dates during nine months of the year. *P. Sylvestus*, is tapped for its juice, which is either fermented into palm wine or toddy, or else it is boiled for its sugar; of the latter article immense quantities are not only used in India, but also exported to this country. Division *Aricinae*. The genus *Areca* belongs to India, and is of great importance, owing to the extraordinary use of the nut of the *A. catechu*, in almost all parts of India, as a narcotic and excitant of the salinary glands.

Division *Cocoinae*.—*Cocos nucifera*, the cocoa-nut palm, is an object of interest even to the inhabitants of Europe as well as the tropics. It yields us a valuable vegetable fat, the importance of which is daily increasing in the manufacture of candles and soap. For its use in making candles we are chiefly indebted to Mr. Wilson, the spirited manager of Price's Patent Candle Company. This company, the largest of the kind in the world, is making an enormous amount of goods for the island of Ceylon,

where they have large plantations of the cocoa-nut palm—the produce of each palm is enormous. An acre will yield about 4000 nuts per annum if well cultivated; if intended for oil, the kernels are extracted and are ground into a pasty mass, called *coperah*, this is submitted to the necessary pressure in the oil mills, and yields for every 100 nuts twenty pounds of the cocoa fat or oil, or 800 pounds per acre. The marc or oil-cake is valuable as food for cattle, besides which one of the most useful of our fibrous materials is derived from the husks. The genus *Attalea* is of great importance to European commerce—from one species is obtained the common Piassava of commerce, and the coquilla nut, so highly prized by turners for making a variety of small ornamental turnings. Another species, *A. cahune*, produces the cahune nut of British Honduras, which has become a matter of some interest, in consequence of several importations having been received for experiments in the production of an oil which its kernels yield in great abundance, but the difficulty of extracting the kernel neutralizes its value. The African genus *Elais* closes the list of the division *cocoinæ*, and it is unsurpassed in value by any of the *Palmaceæ*. *E. Guiniensis* yields the valuable palm oil of commerce, one of the staple imports of Liverpool.

The fruit is borne upon an immense thyme-like spadix, each drupe is pear-shaped, and somewhat less than a walnut, having a soft pulpy merocarp of a light orange color, from which the oil is yielded abundantly when the fruit is exposed in heaps to the sun in the manner employed by the olive-growers. It is quite startling if we begin to think of the vast extent to which this tree must be cultivated, for each tree does not yield more than ten pounds of oil, and the quantity annually imported into England alone is nearly 30,000 tons, which would require 6,720,000 trees; it is probable, however, that several crops are yielded in one year. Palm oil yields by distillation with acid a valuable material called Palmitic Acid, and this, mixed with the neutral fat of the cocoa-nut, is found to form the best known composition for candles, and is, in fact, the material of Price's candles. It is also extensively used in the manufacture of soap, and constitutes a large proportion of the grease compositions used for the axles of railway carriages. The so-called vegetable ivory,

which is the hard albuminous kernel of a very large palm called the *Phytilephas macrocarpa*, and does not range under any of the preceding divisions. Its magnificent primated leaves are from thirty to forty feet in height, and it bears immense clusters of its curious fruit at their base. When immature, this fruit yields a delicious liquid resembling a custard in richness and delicacy of flavor, but when ripe it becomes exceedingly hard, and, like ivory, it can be carved into a variety of ornaments.

Mr. Archer illustrated his lecture by a large and valuable collection of specimens, among which were a complete set of the products obtained from the cocoa nut and palm oils, by Price's Patent Candle Company.

The thanks of the meeting were given to Mr. Archer for his interesting and instructive lecture.

The PRESIDENT said he was glad to hear that Mr. Hatcher, Chemist to Price's Candle Company, at their Bromborough Pool Works, was present, and he was sure the meeting would feel gratified if he would favor them with an outline of the manufacture carried on at those works.

Mr. Hatcher remarked that the general outline of the manufacture carried on by Price's Patent Candle Company, at Bromborough Pool Works, is as follows:—The crude palm oil is melted out of the casks in which it has been imported, and allowed to remain in a melted state in large tanks until the mechanical impurities have settled to the bottom. The clean oil is then pumped into close vessels, where it is heated and exposed to the action of sulphuric acid. The glycerine is thus separated from the oil, and the coloring matter and impurities are carbonized and partly rendered insoluble. The oil, which has now a greyish-brown shade, is washed to free it from the acid. From the washed product distillation now separates the mixed fatty acids (palmitic and palm-oleic acids) as a white crystalline fat, while the residuum in the still is converted into a fine hard pitch. This pitch is fit for any of the purposes to which ordinary pitch is applicable. This mixed fatty acids may be made directly into candles, or they may be separated by hydraulic pressure, aided, if necessary, by heat. The effect of this process is to remove from the mass the liquid part (oleic acid,) which is, after purification, fit for burning in lamps and other purposes. The hard

cake left in the presses is nearly pure palmitic acid—it is brilliantly white, not at all greasy, and has a melting point at  $135^{\circ}$  to  $138^{\circ}$ . It is fit for the manufacture of the finest candles, either alone or in admixture with the stearine of the cocoa-nut oil.

The Company employ 2000 hands, and have, during part of the winter, manufactured from £15,000 to £20,000 worth of candles weekly.—*Trans. Liverpool Chem. Association, in Pharm. Jour.* Dec. 1855.

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#### NOTE ON CANADIAN ISINGLASS.

By PROFESSOR OWEN, F.R.S.

In the department of Canada [Paris Exhibition, 1855,] admirable for its arrangement, and for the illustrative selection and excellent quality of the products of that important Colony, an article of commerce, new in the sense of its being unknown to the Canadians as a native production in 1851, is exhibited, of excellent quality, and of annually increasing abundance. I allude to the Isinglass obtained from the sturgeons (*Acipenser* [*Huso* ?]) which abound in the great rivers and lakes of North America. Noticing the absence of this article in the Canadian department of the London Exhibition of 1851, I at that time called the attention of the Colonial Commissioner to the fact of the existence in Canada of the fishes which yield the most valuable kind of isinglass, and I introduced to the Commissioner the Chief London importer and preparer of isinglass, from whom he received the requisite details as to the best mode of obtaining and preparing isinglass, and as to its commercial value.

My attention was called by the same Commissioner on my first visit to the Canadian department in the “Exposition Universelle,” to the specimens there exhibited, and he gratefully recounted the success that had attended the efforts to establish a commerce for this new and valuable product, which, previous to 1851, had been rejected amongst the useless entrails of the sturgeons.

The value of the isinglass from this fish is chiefly due to its peculiar organic texture, on which its property of clarifying wines and beer depends; no artificial isinglass, however pure

the gelatine, or identical as to chemical composition, with the air-bladder of the sturgeon, answers the purpose of the preparer of fermented liquors.

Hitherto Russia has been the chief source of the supply of isinglass. Our present relations with that country add to the value of the development of the same product in one of our own colonies; and it might be recommended to the Colonial Authorities to afford every due encouragement, aid and instruction to the Canadians dwelling in the vicinity of the rivers and lakes, in the capture of the sturgeons, and the preparation of the air-bladder, and the outer tunic of the alimentary canal, after the modes of obtaining the best Russian isinglass.—*Pharm. Jour.* Dec. 1855, from *Notes of Remarkable Objects in the Paris Universal Exhibition*.

#### EXAMINATION OF VERATRIA AND SOME OF ITS SALTS.

By G. MERCK.

Veratrine has been analysed by Couërbe, and by Pelletier and Dumas. The former obtained on an average, 69.6 per cent. of carbon and 7.2 per cent. of hydrogen (re-calculated for  $C=6$ ); he proposes the formula  $C^{34}H^{43}N^2O^6$  ( $H=0.623$ ). The latter obtained 65.76 per cent. of carbon and 8.54 per cent. of hydrogen re-calculated for  $C=6$ ). The diversity of these numbers, and the circumstance of my succeeding in preparing veratrine in considerable quantity beautifully crystallized, and therefore perfectly pure, whilst the above-mentioned chemists operated upon a resinous body, induced me to submit this substance to a fresh examination.

The veratrine employed was prepared in the following manner: A dilute solution of pure commercial veratrine in alcohol containing as much water as possible, was evaporated on the water-bath at a gentle heat, during which a portion separated in the form of a white crystalline powder, mixed with a brown resinous mass. The latter could be got rid of by washing with cold alcohol. By dissolving the crystalline veratrine thus obtained in highly-rectified alcohol, and leaving the solution to evaporate spontaneously, I obtained it in crystals of about half an inch long, in the form of rhombic prisms.\*

\* The amount obtained is very small in proportion to the amorphous



The crystals, which are at first perfectly colorless and transparent, soon effloresce in the air, become porcellanous and very pulverizable. They are insoluble in boiling water, but are thereby rendered opaque, and lose their form without fusing. They are readily soluble in alcohol and ether, especially the latter. When concentrated sulphuric acid is poured over them, they color it first yellow, and then carmine-red. With concentrated muriatic acid they give a dark violet solution, especially when heated; on the surface of this, small oily drops are formed.

Veratrine neutralizes the dilute acids completely, furnishing colorless solutions, which dry into gum-like masses. Couërbe obtained the sulphate and muriate in a crystalline form, but I did not succeed in doing so. The solution in muriatic acid gives with chloride of platinum a precipitate which is soluble in a large quantity of water; with chloride of gold it gives an insoluble, and with perchloride of mercury a crystalline precipitate.

The analysis of veratrine, dried at  $212^{\circ}$  F., gave,—

|   | I.    | II.   | III.  | IV.   | V.  |        |       |
|---|-------|-------|-------|-------|-----|--------|-------|
| C | 64.73 | 64.51 | 64.99 | 65.00 | ..  | 64=384 | 64.86 |
| H | 8.84  | 8.55  | 8.76  | 8.70  | ..  | 52 52  | 8.78  |
| N | ..    | ..    | ..    | ..    | 5.5 | 2 28   | 4.73  |
| O | ..    | ..    | ..    | ..    | ..  | 16 128 | 21.63 |

These numbers lead to the formula  $C^{64} H^{52} N^2 O^{16}$ .

*Chloride of Gold and Veratrine.*—A solution of veratrine in muriatic acid was added to an excess of a solution of chloride of gold; the precipitate was washed with water, and after drying dissolved in alcohol, from which it separated on cooling, in fine, yellow, silky crystals. These were purified by repeated crystallization from alcohol, and dried at  $212^{\circ}$  F. Analysis gave:—

|    | I.    | II.   | III.  | IV.   | V.    | VI.   |         |       |
|----|-------|-------|-------|-------|-------|-------|---------|-------|
| C  | 41.31 | 41.05 | ..    | ..    | ..    | ..    | 64=384  | 41.25 |
| H  | 5.97  | 5.91  | ..    | ..    | ..    | ..    | 53 53   | 5.69  |
| N  | ..    | ..    | ..    | ..    | ..    | ..    | 2 28    | 3.01  |
| O  | ..    | ..    | ..    | ..    | ..    | ..    | 16 128  | 13.75 |
| Au | ..    | ..    | 21.03 | 20.87 | 20.87 | 21.26 | 1 196.4 | 21.09 |
| Cl | ..    | ..    | ..    | ..    | ..    | ..    | 4 141.6 | 15.21 |

Hence the formula is  $C^{64} H^{52} N^2 O^{16} HCl + AuCl^3$ .

veratrine employed, so that the latter is probably a mixture of the pure base with resin; and the presence of this resin may be the reason why it is impossible, or very difficult, to obtain crystals from the alcoholic solution of ordinary veratrine.

*Sulphate of Veratrine.*—An excess of veratrine was treated with dilute sulphuric acid; the perfectly neutral solution was filtered from the undissolved portion, and left to evaporate over sulphuric acid. When dry, the salt formed a colorless gum-like mass, which was readily triturated, and became electrical when rubbed. Dried at  $212^{\circ}$  F., it gave the following numbers:—

|                 | I.    | II.   | III. | IV.  |        |       |
|-----------------|-------|-------|------|------|--------|-------|
| C               | 59.48 | 59.45 | ..   | ..   | 64=384 | 49.90 |
| H               | 9.10  | 8.44  | ..   | ..   | 53 53  | 8.26  |
| N               | ..    | ..    | ..   | ..   | 2 28   | 4.38  |
| O               | ..    | ..    | ..   | ..   | 17 136 | 21.22 |
| SO <sup>3</sup> | ..    | ..    | 6.26 | 6.33 | 40 40  | 6.24  |

From this the formula  $C^{64} N^{52} O^{16}$ , HOSO<sup>3</sup>.—*Chem. Gaz.*, Nov. 15, 1855, from Leibig's *Annalen*.

#### NOTE ON VARIOUS PHENOMENA OF OXYGENATION.

By F. KUHLMANN.

##### *New Process of Formation of Sulphuric Acid.*

It is well known that many hydrocarbons become resinified by contact with the air, in consequence of an absorption of oxygen. This is the case with most of the essential oils, and the drying oils undergo analogous modifications by a slow acidification; but it has not been suspected that these hydrocarbons, before undergoing any considerable modification in their constitution and properties, form, as it were, a provision of oxygen under such conditions, that when they come in contact with bodies which have the property of more immediately forming an intimate combination with oxygen, they yield the absorbed oxygen to the latter, and again acquire their original state, becoming again capable of attracting oxygen from the air. In these cases the resinifiable essential oils constitute sources of oxygen for the benefit of other bodies, and to a certain extent play the part taken by deutoxide of nitrogen in the manufacture of sulphuric acid.

When oil of turpentine is exposed to the air for a few days, and then agitated with a solution of sulphurous acid in water, the mixture becomes strongly heated, the temperature rises to  $122^{\circ}$  F., and even higher, and the sulphurous odor soon disappears,

leaving only that of the turpentine. In this reaction, which appears to be facilitated by the solar radiation, formation of sulphuric acid takes place at the expense of the oxygen absorbed by the turpentine, which is taken from it by the sulphurous acid before it has time to appropriate it in a more permanent manner.

If sulphurous acid gas be passed into a moist glass globe containing the vapour of an oxygenated essential oil, the sulphurous acid disappears by degrees; on the other hand, if a mixture of an aqueous solution of sulphurous acid and an aërated essential oil be allowed to become concentrated in contact with the air, the sulphuric acid formed carbonizes the essential oil without the necessity of raising the temperature of the mixture.

The oxygenating action of the aërated essential oil is not confined to sulphurous acid; it extends also to other acids, such as hyposulphurous acid, the sulphites, arsenious acid, &c.

#### *Peculiar Reactions of the Essential Oils in Painting.*

The essential oils, from the nature of their constituent principles, may be regarded as possessing naturally, and especially under the influence of heat or of the sun, a reductive power which acts slowly upon white lead and the colored oxides. However this may be, the resinifiable essential oils temporarily possess another property of an opposite nature, as I have just shown; and this deserves to be taken into consideration in the study of the modifications undergone by paintings in oil, namely, that of absorbing oxygen by mere contact with the air. The result of this is, that at the moment of their employment the essential oils may exercise an oxidizing action, tending to destroy vegetable colors and to modify some mineral colors. Thus

Litharge, heated with aërated oil of turpentine furnishes the puce-colored oxide of lead.

If oil of turpentine be agitated at the ordinary temperature with the hydrated protoxides of iron, tin and manganese, these oxides pass to a higher degree of oxidation. With a solution of protosulphate of iron, basic sesquisulphate is produced, which separates from the liquid. The white precipitate formed by ferrocyanide of potassium with a protosalt of iron immediately acquires the intense color of prussian blue.

Blue and red flowers, decolorized by sulphurous acid, reacquire

their colors by contact with the aërated essential oil. The essential oil, freshly distilled, possesses no oxidizing power.

In the association of colors applicable to painting in oil, regard must therefore be had not only to the modifications which may be produced upon certain colors by the various mutual reactions of the coloring matters, but also to the oxidizing action of the essential oil, which must be manifested at the first moment of its application in the form of varnish.

### *General Considerations.*

In all the reactions just referred to, the oil of turpentine, and in general the essences which are capable of absorbing oxygen from the air, behave as oxidants, the energy of which is sufficiently marked by the great elevation of temperature produced by the contact of the aërated essential oil with a solution of sulphurous acid.

It is important to ascertain whether this oxidizing property belongs to certain oils, and whether the proof of this fact may not account for the frequent spontaneous combustion of oiled tissues. Considerable interest also attaches to the investigation of the action of the vapors of essential oils upon putrid miasmata, and the determination of the question whether, in these cases, there is not a combustion of the principles diffused in the air.

If oxygen can thus dissolve in certain liquids without combining, we are led to suppose that where it is disengaged it exerts its action upon the bodies with which it is in contact in the dissolved state before becoming gaseous. Are not the same circumstances presented in all the chemical reactions in which in our explanations we have recourse to the intervention of nascent gases?

Thus we shall be led to inquire whether other bodies do not share with certain essences in the power of forming a provision of oxygen, and yielding this reagent to assist in various reactions. This study may throw great light upon the phænomena of animal and vegetable physiology. The solution of oxygen in the blood by the act of respiration, and its subsequent assimilation, already present a great analogy to the phænomena which have just been described. As a question of health, it would be advisable to ascertain what may be the consequences of the re-

spiration of air charged with essential oil in apartments newly varnished. On the other land, we know how unfit water which has not been aërated is for good alimentation.—*Ibid*, from *Comptes Rendus*, Sept. 24, 1855.

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## ON THE REDUCTION OF IRON BY HYDROGEN.

By PROF. WOEHLER.

(Translated by J. M. Maisch.)

To obtain an oxide of iron suitable for the process of reduction by hydrogen, Woehler follows a way proposed by Faraday for obtaining a good polishing powder. *Pure* sulphate of iron (green vitriol) which needs not to be exsiccated, is mixed with pure table salt, (two or three times the weight of the anhydrous vitriol) and in a Hessian crucible heated to redness, and melted. After cooling and washing with water, oxide of iron remains behind in dark red, shining scales. By this process some iron is lost by the sublimation of some chloride, which however is insignificant, considering the cheapness of the material. This oxide is then introduced into a clean gun-barrel or glass-tube, which, if necessary, may be surrounded by a layer of clay. The hydrogen must be dried by chloride of calcium or sulphuric acid; crude oil of vitriol may be purified by Buckner's method (*Amer. Journ. Ph.*, 1855, 417) from all arsenic, which otherwise would be taken up by the iron, rendering it unfit for medical use. It is, however, without any influence on the purity of the iron, if hydrogen be evolved by iron, (wire or nails,) instead of by zinc, in which case the pure sulphate of iron will at the same time be obtained.

After the atmosperic air is expelled from the apparatus, the pipe is heated to redness, and the current of hydrogen is continued until water ceases to escape on the open end of the tube; the apparatus is then allowed to cool before the iron is taken out, otherwise it will take fire and burn. The reduced iron appears in thin grey scales, pseudo-morphoses of the crystals of the oxide; they are porous, and may be easily reduced to the finest powder, which is light grey, without lustre, catches fire and dissolves in diluted sulphuric acid, without leaving a residue.

If, before pulverizing, it shows partly a darker or even black color, the reduction has not been complete.

Another probably more recommendable mode for preparing the iron, is the reduction of the oxalate of the protoxide iron by hydrogen. This salt, remarkable for its fine lemon-color, may, as is well known, be obtained by precipitation of concentrated solution of sulphate of iron with oxalic acid. The dry salt is so easily and at so low a heat reduced by the hydrogen, that a glass tube will answer excellently for the operation; towards the end, however, the tube must be heated to dull redness, to prevent the iron powder from becoming pyrophoric, and afterwards the apparatus must be allowed to cool, as the iron, if only little warm, will burn in coming in contact with the air. (*Annalen d. Chem. und Pharm.*, 1855, April 125, August 192.)

#### ON THE ACTION OF GLUCOSE ON THE SALTS OF COPPER IN THE PRESENCE OF ACETATES.

By M. ALVARO REYNOSO.

*Sulphate of Copper.*—It is well known that when sulphate of copper is boiled for a long time with glucose, it is decomposed, and metallic copper is precipitated. If the sulphate of copper be mixed with acetate of soda, potash, lime, magnesia, zinc, cobalt, nickel or manganese, and then boiled with glucose, a reduction is immediately produced, and protoxide of copper is precipitated. This reaction shows that sulphate of copper is decomposed by contact with these acetates, forming acetate of copper, which is reduced by the glucose.

*Nitrate of Copper.*—This salt, mixed with any of the above acetates, or with acetate of cadmium, strontian or lead, and boiled with glucose, furnishes a precipitate of protoxide of copper. Although this precipitate is also produced by boiling nitrate of copper alone with glucose, there is no reason to doubt the formation by double decomposition of acetate of copper, for in the latter case the reaction takes place at the moment of ebullition, whilst with the nitrate alone it requires long boiling.

*Bichloride of Copper.*—When concentrated solutions of bichloride of copper and acetate of soda are mixed, the acetate of copper soon crystallizes. At first sight it might therefore be

supposed that the acetate of copper would remain in the mixture when boiled; but it is found by experiment, that at the temperature of ebullition the mixture is composed of bichloride of copper and acetate of soda; so that heat causes a reaction the reverse of that which takes place at ordinary temperatures. To see this phenomenon clearly, certain precautions must be taken. When bichloride of copper in excess is mixed with acetate of soda, a precipitate is formed, especially by boiling, which prevents the action of glucose on the mixture. The same precipitate is formed by mixing acetate of potash, magnesia, manganese, zinc, cadmium, strontian, cobalt, or nickel with the bichloride of copper. This precipitate is also produced by boiling acetate of copper with an excess of bichloride of copper, and also when chloride of sodium is added to acetate of copper.

If an excess of a very concentrated solution of acetate of soda be poured into a solution of bichloride of copper, and glucose be added to the mixture, protochloride of copper is formed on boiling, and its presence is more or less distinct according to the quantity of the acetate. If this be not in very great excess, the protochloride is seen to precipitate, leaving a colorless supernatant fluid. If the acetate of soda be in very great excess, the protochloride of copper is decomposed by it as fast as it is formed, and the final result is protoxide of copper.

*Acetate of Copper.*—When acetate of copper is boiled with glucose, whatever may be the excess of sugar and the period during which the mixture is boiled, the whole of the copper is never precipitated, some of it always remaining in the liquid. To effect the complete reduction of acetate of copper, it is sufficient to mix a great excess of acetate of soda or potash with this salt. This explains why the whole of the copper is precipitated when a great excess of acetate of soda or potash is mixed with the sulphate or nitrate of copper before boiling it with the glucose.

*Sesquisulphate and Sesquinitrate of Iron.*—Acetate of copper, mixed with either of these salts, loses the faculty of being reduced by glucose. This character, and the peculiar color of acetate of iron which makes its appearance at the moment of mixture, prove that the acetate of copper is decomposed by the iron-salts.

When acetate of soda is mixed with sulphate or nitrate of copper, acetate of copper soon crystallizes out.—*Chem. Gaz.* Oct. 15, 1855, from *Comptes, Rendus*, August 13, 1855.

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#### DISINFECTION AND PRESERVATION OF NITROGENOUS MANURE.

[*Read before the National Institute, December 3, 1855, by Dr. D. BREED, U. S. Patent Office.*]

Intelligent persons are aware that the poisonous effluvia emanating from gutters, sewers, and yard vaults would soon generate a terrible pestilence in any city or town but for the constant diffusion of the poison. But it may not be so generally known that some of these hot-beds of disease can be easily rendered comparatively harmless and inoffensive. Our affected refinement shrinks from the mention of a disgusting evil, which from habit we have come to regard as necessary. Is it not, however, a false delicacy which makes us content to inhale with every breath such pestilential exhalations, and yet forbids a discussion of their properties, origin, or effects, even with a view of reform? Shall we not be more truly refined when one single square of some American city is purified from the stench of night-soil, made ten-fold more intolerable by the ignorance of the scavengers who infest every neighborhood, administering slow poison to us in our sleep, not unfrequently falling victims themselves?

Many years ago the atmosphere of Paris had become so polluted as to excite the most alarming apprehensions as to public health. Attention was directed to the privies as the chief nuisance, and various reformatory plans have been tried, until the united skill of chemists and of practical men has made Paris in this respect a model worthy of imitation. At present complete deodorization and disinfection are accomplished, so that neither scavengers nor others need suffer annoyance. Many other European cities have reformed in this respect, and America has no longer an excuse for neglecting this much-needed sanitary reform.

In privy vaults there is a process of putrefaction constantly going forward, and a consequent incessant escape of poisonous gases into the atmosphere. Moreover, the fluid portions of the



night soil percolate the earth underlying all our cities. These matters washed forward by the rains, diffuse the products of putrefaction every where; then the heat of summer, by evaporation at the surface, may bring poisonous effluvia up from the whole area of the city. The water of our wells, as is known, are impregnated with these products. Not long since an intelligent citizen requested me to make a chemical examination of the water of a well which was formerly very good, but was now strongly flavored, and by several persons it was thought to have the taste of a chalybeate water. Upon testing, the water was found to have imbibed rather freely from the privy products of the neighborhood! Such wells are common.

Not only does public health demand that this grievous nuisance should at once be abated, especially as the requisite means are simple and well known, but agriculture seconds this demand, inas much as night-soil is valuable as manure, particularly when treated so as to retain all the nitrogen, most of which is liable to escape in the ammonia which is generated during the process of putrefaction. Indeed it contains all the elements derived from the soil by vegetation, and hence is an excellent fertilizer.

The reform in Paris, to which allusion has been made, was effected by the Société d'Agriculture and the Société d'Encouragement pour l'Industrie Nationale, and in the United States we may expect reform from the exertions of agriculturists rather than from those of sanitary officers.

One general criticism may be applied to the means commonly recommended for disinfecting and deodorizing privies, sewers, and gutters. The methods proposed do not meet all the chemical conditions; they attempt too much with a single reagent. In night-soil many elements occur, forming various compounds, organic and inorganic, some acid, some alkaline or basic, some united as fixed salts, others becoming gaseous, and tending to escape into the atmosphere. Among the gaseous products are sulphydric acid, carbonic acid, ammonia, or carbonate of ammonia, together with various exhalations not yet investigated. But the quantity of some of these is so inconsiderable as to require little attention. Now, in order to completely deodorize and disinfect night-soil, it is necessary to add such different chemical reagents as will unite with each of these gases, converting them

into constituents of fixed compounds. But it often happens that a reagent that will fix one gas will expel another. Lime is in common use, because at first it mostly destroys the odor by decomposing the sulphydric acid and forming sulphide of calcium and water,  $\text{H S} + \text{Ca O} = \text{Ca S} + \text{H O}$ . But the sulphide of calcium thus formed is liable to be decomposed by carbonic acid, which is always present in the mass. The lime also fixes the carbonic acid, though the former expels ammonia. Moreover, the lime may hasten the oxydation of the nitrogen, forming nitric acid, which latter may either fix ammonia or expel carbonic acid. Thus lime alone cannot be an efficient disinfectant.

Again sulphate of lime, (plaster,) either calcined or simply pulverulent, is in use. In this case the sulphuric acid unites with the ammonia of the night-soil, and the lime with the carbonic acid,  $\text{N H}_4 \text{O}, \text{C O}_2 + \text{Ca O}, \text{S O}_3 = \text{N H}_4 \text{O}, \text{S O}_3 + \text{Ca O}, \text{C O}_2$ . The lime also, as before, will decompose the sulphydric acid, but the resulting sulphide of calcium is still liable to decomposition. Calcined plaster itself may evolve sulphydric acid by the simple addition of water, owing to the presence of some sulphide of calcium. Therefore plaster, though better than lime, can never be an effectual deodorizer. In the play of chemical affinities, when either lime or plaster is used, some of the sulphur must alternately unite with hydrogen and with calcium until it escapes in sulphydric acid at the surface. The employment of bleaching salt (so-called chloride of lime) is very objectionable on account of the chlorine thus evolved, and the consequent impregnation of the air with a poison often more deleterious than the effluvia which it is intended to destroy.

If, instead of lime or its salts, we employ a small portion of the salt of a heavy metal, as sulphate of zinc, iron, or of copper, the sulphydric acid is decomposed, as before, and fixed sulphide of the metal is formed. This sulphide is not decomposable by any substance present. Here, then, we have a complete remedy for sulphydric acid. Sulphate of iron may be the cheapest salt for this purpose, but it, as well as salts of copper, forms a black sulphide, sometimes objectionable on account of the color. The zinc salts, however, form a white sulphide, which can never render a city smutty, however freely used. Of a solution of sulphate of zinc (of  $35^\circ$  to  $40^\circ$  Baumé) it is found necessary to

employ only 2 p. c. of the volume of night-soil to decompose all the sulphydric acid, and then lime and its sulphate may be added to neutralize the ammonia and carbonic acid.

Of all the disinfectants and deodorizers hitherto employed no substance produces more remarkable effects than fresh charcoal in a pulverulent state. Its antiputrescent effects were discovered by Lowitz about 1790; but the discovery has been slowly applied. In 1829 Frigerio proposed to employ charcoal for preserving meat, and in 1836 he published in the *Brevet d'Invention* an account of a safe, consisting of a double screen of wire gauze with the interspaces filled with fresh charcoal. This safe was found to preserve meat in the hottest weather perfectly sweet for a whole week. During many years charcoal has been (especially in Europe) extensively mixed with human excrements, for which purpose it has been found to be admirably adapted, not only by its deodorizing and disinfecting qualities, but also by its being itself a powerful stimulant to the growth of vegetation. The experiments of Dr. Stenhouse, of London, prove that a carcass covered with charcoal powder emits no unpleasant odor during its entire decomposition; that hospital gangrene and other putrid sores are arrested by the use of charcoal. He suggests the use of charcoal air-filters for admission of air to apartments in infected districts, and charcoal respirators for those exposed to infection. He thinks the charcoal decomposes effluvia by simple oxidation, converting their carbon into carbonic acid, their hydrogen into water, and thus hastening decomposition, instead of being antiseptic, as heretofore supposed. The complete success of the charcoal screens used in London clearly indicate the propriety of using charcoal to arrest the contagion of yellow fever. During the recent discussion respecting the burning of bodies a lady suggested that charcoal be strewn freely into the grave so as to surround the coffin, thus completely preventing the escape of effluvia.

For the last twenty years chemists have been employed in applying their science to the manufacture of poudrette, and in investigating the causes of insalubrity connected with the management of night-soil. These investigations, conducted in different countries, have required such varied experiments that the labor may be regarded as only begun. In the present state of

our knowledge we may briefly enumerate the chief emanations from night-soil, with the best disinfectant or corrective known, as follows :

1. Sulphydric acid ; sulphate of zinc or of iron, (vitriol solution.) 2. Carbonate of ammonia ; sulphate of lime, (powdered plaster.) 3. Free carbonic acid ; lime, (quick or slaked.) 4. Putrid exhalations, (not investigated ;) charcoal, (better fresh and powdered.) Only a very small portion of vitriol solution is necessary at one time, and this should be so sprinkled over the mass as to meet the gases rising to the surface. Plaster, lime, and charcoal may be used more freely ; yet a small portion of these, if frequently strewed upon the surface, will be sufficient. It has been suggested that the disinfectant be supplied, as water is, from a reservoir, by simply turning a faucet.

In the manufacture of *poudrette* the chief objects are, first, to preserve all the fertilizing matter of night-soil ; and secondly, to expel the excess of water, amounting in some instances to nine-tenths of the whole volume, (ordinary excrements when fresh are four-fifths water.) An excellent method of accomplishing these objects is to mix thoroughly with the night-soil a solution of sulphate of zinc, and leave at rest for a time, when the watery portion may be pumped off and allowed to flow into a sewer or gutter, (Paris Medical Police,) without forming a nuisance. It may be well to allow a small jet of solution of sulphate of zinc to mix with the stream (Messrs. Quesney) as it issues from the pump. The disinfected residue in the vault may now be removed, spread in thin layers on a resin or other water-tight floor, (A. Wallet,) and allowed to evaporate to dryness under an open shed or by furnace heat. The *poudrette* has been sometimes pressed in cubical masses, pierced with holes, to promote desiccation. Thus prepared it requires no packing for transportation or preservation. A little rain will do it no harm if the wet surface be immediately dusted with plaster. Poulet has recommended the employment of an emulsion of oils and alkalies in connection with the zinc salts, in order to obtain a clearer liquid to pump off.

But the better method is recommended by Susser & Fouchet, Lepelletier, (Moniteur Industriel,) by which all the mineral and organic matters are entrapped in a gelatinous precipitate of silica.

This process is employed after the ammonia salts have been fixed. An abundance of silicate of soda is mixed with the night-soil, and then sulphuric or some other strong acid is added to precipitate the silica:  $\text{Na O, Si O}_2 + \text{S O}_3 = \text{Na O, S O}_3 + \text{Si O}_2$ . The silicate of soda is very cheaply prepared by heating in a furnace a mixture of common salt and sand:  $\text{Na Cl} + \text{Si O}_2 = \text{Na O, Si O}_2 + \text{Cl}$ . As the refuse zinc salt may be employed for artificial manure, Gaultier de Claubry has suggested that the extensive utilization of such refuse in this way may so reduce the expense of operating the galvanic battery, as to introduce it as common power apparatus.

In Paris, it was found that one man with a horse would manufacture, in the old way, with plaster and coal, 25 tons of poudrette per day, and that the entire cost of manufacture amounted to only \$1.87 per ton. According to chemical analysis the nitrogen in night-soil is 13 per cent. of the dry matter. Now, the best Peruvian guano contains only 14 per cent. of nitrogen, whilst the average quality contains but 6 or 7 per cent. Therefore poudrette, properly prepared, will be as valuable as the best Peruvian guano, and of twice the value of the average. The experience of farmers sustains the results of analysis.

The nitrogen in urine is from 25 to 33 per cent. of the solid matter. A manure prepared from urine, and sold under the name of urate, is a most powerful fertilizer, equal to four times its weight of average guano, or twice the value of best Peruvian.

In the various processes of manufacturing poudrette, it is too often forgotten that the night-soil should be treated before the urine is decomposed. The urine is much richer than the fæces in nitrogen. The nitrogen in urine is found chiefly in that remarkable compound denominated *urea*, which forms white prismatic crystals, quite inodorous. Urea contains two atoms of nitrogen, two of carbon, four of hydrogen, and two of oxygen, and its formula, deduced from its ultimate analysis, would give,  $\text{N}_2 \text{ C}_2 \text{ H}_4 \text{ O}_2$ . But organic chemistry regards such a formula as empirical, and groups these elements according to their products of decomposition, and the compound which may be formed by a part or all of them with oxygen or with the halogens, by substitution or otherwise.

The true constitution of urea is expressed by the following

formula:  $(\text{N C}_2 \text{H}_4 \text{O}_2) \text{N H}_3$ ; it is therefore urenoxyd-ammonia. Now, this urea is rapidly decomposed even at ordinary temperatures, and its elements, with two atoms of water, form two atoms of ammonia and two of carbonic acid,  $(\text{N C}_2 \text{H}_4 \text{O}_2) \text{N H}_3 + 2 \text{H}_2 \text{O} = 2 \text{N H}_3 + 2 \text{C O}_2$ . Both of these products are volatile, and therefore, if urine be allowed to decompose, the most valuable constituents for manure are lost in the atmosphere.

In estimating guano the nitrogen is the true standard of value. Estimating night-soil in the same manner, and assuming that we preserve all the nitrogen, the city of New York and environs would afford manure equal in value to 51,000 tons of best Peruvian guano, or \$2,550,000 per annum. During the last seven years, according to the Report of the Patent Office for 1854, the United States has imported on an average 45,869 tons of guano annually. Much of this guano is worthless, being so when first obtained, or having been washed in order to manufacture ammoniacal salts for sale. The practice of washing guano is a common trick of trade, and usually a safe one, since farmers never employ a chemist, and washed guano can be bought at a comparatively low price. But even estimating all the imported guano as equal to the best Peruvian, worth \$50 per ton, it would amount to but \$2,293,450, which is less by \$256,550 than the value of the night-soil of the city of New York, as above estimated. Great Britain has imported on an average during the last seven years, 138,496 tons of guano per annum, which, at \$50 per ton, amounts to \$6,924,800. The night-soil of London and environs would yield annually nitrogen corresponding to 120,000 tons of best Peruvian guano, and would doubtless exceed the amount of nitrogen imported. As long ago as 1834, it was estimated that London wasted manure (principally night-soil in the Thames) to the amount of \$2,000,000 per annum. How much London or New York now wastes I am not informed; but all will agree that public health and the interests of agriculture most earnestly demand a thorough sanitary reform of all our cities and towns.—*National Intelligencer*, Washington. Dec. 12, 1855.

## ON THE GENERATION OF AMMONIA.

By A. VOGEL, JR.

To obtain ammonia in the gaseous state, its concentrated aqueous solution is usually heated, or else a mixture of sal ammonia with lime. It is evident, that in both cases a very moist gas must be obtained, which, if a dry gas is wanted, has to undergo a drying operation, which is always connected with considerable difficulties. To avoid these, it has been proposed to heat the mixture of sal ammonia and powdered lime in an iron vessel in their dry state. This method has been repeatedly tried by me, when I was convinced that it had no advantage. A considerable temperature is required to completely decompose the sal ammonia, which, in the form of vapor, must be diffused through the lime, and if it is not entirely free of organic substances, the obtained ammonia is empyreumatic. In the following, I give a method entirely different from the former ones, which has been followed for some time for the generation of dry ammonia; it is founded on the observation, that a solution of chloride of calcium in aqua ammonia, boils at a lower point than the pure liquor. Experiments have shown, that liquor ammonia saturated with chloride of calcium, boils at  $80^{\circ}$  C., ( $176^{\circ}$  F.), and if diluted with an equal volume of water, at  $93^{\circ}$  C., ( $199^{\circ}$  F.); by addition of more water, the boiling point rises still higher. In this fact we have a means of obtaining gaseous ammonia, at a temperature far below the boiling point of water, of which much less is evaporated than by the boiling of the aqua ammonia. To a concentrated liquor in a proper flask, chloride of calcium in pieces is added until nothing more is taken up. A moderate heat applied by a small spirit lamp immediately causes a quick and regular generation of gas, accompanied—provided the temperature be regulated with care—by very little water, the greater part of which will condense in the receiver, whilst the last traces of water may be removed by passing the gas through a tube, hardly half a foot in length, filled with pieces of caustic potassa. If prepared according to the old methods, even by application of a series of drying tubes, it is difficult or nearly impossible to obtain the gas perfectly free from water.—*Buchner's N. Repert. f. Pharm.*, 1855, 244.

ON THE USE OF ALCOHOL MIXED WITH PYROXYLIC SPIRIT  
FOR CERTAIN PHARMACEUTICAL PREPARATIONS.

By J. F. MACFARLAN, of Edinburg.

[Our readers are no doubt generally aware of the difficulties thrown in the way of employing alcohol in Great Britain, by the excessive excise duty imposed on all alcoholic liquors, which has rendered the English manufacturing chemist unable to compete with the foreign chemist in certain articles. Recently, the "Board of Inland Revenue" have granted the right, on taking out a license, to use alcohol after it has been mixed with one-ninth of its weight or bulk of pyroxylic spirit or wood naphtha, which addition, whilst it wholly unfits the alcohol for use as a beverage, does not materially interfere with its employment in the arts as a solvent. This amelioration is attributed to a favorable report by Dr. Hoffman and Profs. Redwood and Graham, to whom the subject was referred by government. It is but natural that pharmacutists should seek to derive their share of benefit from the new measure, and the following remarks on the application of this "Methylated Spirit" in the production of ether and chloroform, which we extract from a long article on the subject in the *Pharmaceutical Journal* for January, 1856, show an attempt in this direction,—EDITOR. AM. JOUR. PHARM.]

In the arts, ether has come into very extensive use, especially in the new and beautiful art of photography; and the question is, whether ether, prepared from the methylated spirit, will answer the different purposes for which it has been used equally well with that prepared from pure spirit of wine?

There is no difficulty in the preparation. The same process as is in use for making ether from alcohol suffices to make it from the methylated spirit, and accordingly it has been prepared at our laboratory in the same apparatus, and in the same manner. But when prepared, the question returns, What is it? Is it the ordinary sulphuric ether? does it contain an admixture of methyl ether? and if it does, what effect has that admixture upon it? If an attempt be made to answer the first question by a reference to flavor, it will be difficult to do so, for the flavor does not differ, or differs very slightly indeed, from recently-made ether from alcohol, and the specific gravity may be made quite the same. In appearance and acting there is absolutely no difference. Its solvent powers appear to be the same; and, doubtless, it will be largely employed in all those operations in chemistry and pharmacy in which ether has hitherto been used. Again,



we find that the two ethers closely resemble each other; they belong to the same series of compound radicals, whose general formula is  $C_n H_n + 1$ , Methyl being  $C_2 H_5$ , Ethyl  $C_4 H_9$ —and their difference is in the greater volatility of the methyle, which, at a temperature below zero of Fahrenheit, remains a gas, and has resisted a pressure of 20 or 30 atmospheres, while ethyl is easily condensed under the ordinary pressure) and boils at  $23^\circ$  Fahr. (Gregory.) Their ethers in this respect also differ widely. Methylic ether “is a colorless liquid, of a peculiar ethereal smell, and liquid only at a temperature of  $22^\circ$  to  $40^\circ$ .” (Regnault.) Ethylic ether is so well known that it need not be described. Both are obtained by the action of sulphuric acid on their respective alcohols; and when these liquids are previously mixed their ethers may be expected to come ever together, the one being soluble in the other, and, unless in so far as the greater volatility of the one may dispose it to separate from the other, and thus to pass into a state of gas, that union may be permanent. The extreme difficulty which the distinguished chemists who operated on this subject found in separating the two alcohols, and on which, indeed, the whole of the scheme is founded, renders it highly probable that it will be no easy matter to separate their ethers from one another.

As one means, however, of determining whether they are so combined in the ether prepared from the methylated spirit, the boiling point was taken. The boiling point of ordinary sulphuric ether is differently stated, and the first step was to ascertain its boiling point at the different densities of the Edinburgh and London Pharmacopœias, the former being  $.735$  at  $60^\circ$  Fahr., the latter  $.750$ ; the boiling point then of the former was ascertained to be  $96^\circ$  as given by Dr. Christison, the latter  $98^\circ$  Fahr.

The boiling point of ether prepared from methylated spirit at these densities was found to be for density,  $.735$  at  $60^\circ$  Fahr.,  $80^\circ$ ; and for  $.750$ ,  $82^\circ$ ; thus showing that the boiling point of the one is sixteen degrees lower than that of the other, and affording conclusive proof of the presence of methylic ether.

But what change does this make in the quality of the ether? The methylic ether remaining a gas at the ordinary temperature of the atmosphere renders it impossible to ascertain what its properties are in the separate state; but there is no reason to

suppose that they differ much from those of ordinary sulphuric ether. It is polymeric with alcohol for  $C_4 H_6 O_2 = 2 (C_2 H_3 O)$ , and is described as being of ethereal odor. The explanation or theory of its production is the same, and its application and uses in the arts may also be the same. Could it be procured in sufficient quantity, it might even be found preferable for many purposes, especially in medicine, as it would necessarily prove a much more diffusible stimulus, and more useful as an anti-spasmodic.

But thinking it desirable to ascertain this point with some degree of certainty, and whether its internal employment would be perfectly safe, I resolved to try it upon myself. I took the ether as now made from the methylated spirit, and found that its effects were precisely the same as those of the ordinary ether made from alcohol. The dose, as stated by Dr. Christison, is from half a drachm to a drachm,  $\mathfrak{zss}$ . to  $\mathfrak{zj}$ . Having first taken the ordinary ether from alcohol to ascertain its effects, I took doses of the ether from methylated spirit, varying from  $\mathfrak{zss}$ . to  $\mathfrak{zij}$ ., and found the effects to correspond so nearly with those of the other as to be unable to note any difference between them; the pulse remained unmoved, about 80, and the flavor given to the breath was precisely that of ether and ether alone; no trace of the ordinary flavor of the pyroxilic spirit was perceptible, and the effects were those of ether alone. The effect of the three-fluid drachm dose was, as might have been expected, more powerful; the pulse was slightly quickened, the heat of the skin a little augmented, and the flavor of the ether in the breath continued for a longer period; but there was no other effect perceptible. There was no pain of the head, no tinnitus aurium, no tendency to nausea, nor any unpleasant symptom whatsoever. Thus, so far as its employment as a remedial agent is concerned, I have no difficulty in affirming that it is quite as safe, and to the full as useful, as ether from alcohol has hitherto been found; though until I had tried it on myself, I could not have spoken of it so decidedly as I now venture to do. In like manner, I have no doubt but that it will be found equally valuable in the arts as the other; the experiments in photography are not yet perhaps sufficiently decisive to determine in what it may be employed and in what it may not; but the great reduction in price renders it

a matter of sufficient importance to call for the utmost attention in examining the subject; and, doubtless, a short time will enable the lovers of this beautiful art to obtain the full benefit of the liberal intentions of the Government.

*Chloroform.*—Whatever difficulties or doubts may attend the determination of the fitness of the methylated spirit for the preparation of ether, none remain regarding its employment in the preparation of chloroform. At first, great doubts were entertained as to whether it would be possible to purify the chloroform thus prepared so as to render it fit for use as an anæsthetic agent. No doubt was entertained of the possibility of preparing it; for not only did the chemical composition of the spirit warrant the assurance, but chloroform had been prepared from pyroxilic spirit itself, and it is known that it may be prepared from various other things. The question was, Can it be freed from those oils which contaminate it as entirely as the chloroform made with pure alcohol?

In whatever way chloroform may be prepared, it is a definite compound—a terchloride of formyl. By Dumas' analysis it was found to consist of 2 equiv. of carbon, 1 hydrogen, 3 chlorine,  $C_2HCl_3$ . The materials for this are found both in alcohol and pyroxilic spirit. The latter being  $C_2H_4O_2$ , the former  $C_4H_6O_2$ , either of these, when distilled along with water and chloride of lime, supply the materials for chloroform. A definite compound being thus produced, it remains only to see that it is purified so as to render it safe for employment on the human frame. The vast amount of benefit that has been conferred on suffering humanity specially demands this attention in the preparation; and had it been found impossible so to purify it, nothing would have justified the use of the methylated spirit; alcohol alone would have had to be employed. But it has been so purified, and the specimen now on the table will bear the closest examination. The chief impurity to be guarded against is the presence of sundry oils formed in the process, and which rise along with it in the first distillation. These can be detected in two ways: 1st, by the action of sulphuric acid, and 2dly, by the flavor. As to these, Muspratt says: "The rectified product should not tinge oil of vitriol when shaken with it, unless in a very trifling degree. If it colors the acid strongly, or, if when evaporated on the palm

of the hand, it leaves an unpleasant odor, it is not fit for use." A still finer test of the flavor may be found in the employment of white bibulous paper; a little may be poured upon a piece of it, and its flavor watched until it evaporates so as to leave the paper dry. If the flavor continues the same throughout, the proof is complete that it is pure, for the oils referred to are more persistent than the chloroform, and when it has evaporated, their odor, if present, will display itself. The chloroform prepared from the methylated spirit stands these tests as well as that prepared from alcohol alone. Its specific gravity may also be referred to. "The rectified chloroform should have the specific gravity 1.49 to 1.50." (Gregory.) That from the methylated spirit has the specific gravity 1.50 at the temperature of 60° Fahr. It is necessary to mention this, for it has happened that some have tried the gravity without paying any attention to the temperature, and expected to find it exactly the same in the dog days as in the most intense frost. Chloroform from methylated spirit will be found to stand this test also quite as well as that from alcohol; and any chloroform found much under 1500 at 60° Fahr. should be rejected as in some way contaminated. But nothing is so important as the application of the article in medicine and surgery, and it is very satisfactory to be able to say that the chloroform thus prepared has been found equally effectual and equally safe with that prepared from alcohol alone. Nothing was wanting but this test, and this has been applied so as to leave no doubt whatever regarding it. It has been used in many cases, and its effects found not to differ in any way from those of chloroform prepared from alcohol alone. I need only, however, say that it has been used in the Royal Infirmary, under the eye of Professor Syme. In a recent operation of a protracted nature, in a case of necrosis, it was applied with entire success, and to-day I had an opportunity of witnessing the operation of excision of the shoulder-joint performed in the theatre of the hospital by that accomplished surgeon. The operation was performed in his usual dexterous manner and promises a perfect cure, and to witness the patient, a young woman, lying unmoved on the operating table, entirely unconscious of the progress of the surgeon's knife, and in a state of as calm and quiet repose as if she had been merely enjoying a refreshing sleep, was a

gratifying sight, exhibiting not merely the blessing conferred on suffering humanity by the use of chloroform, and the gratitude due to Professor Simpson on that account, but in this particular case satisfactorily proving that chloroform prepared from "methylated spirit" is as effectual, as safe and as readily applied as that prepared from spirit of wine alone. Indeed, the learned Professor stated that he would give it the preference, inasmuch as it seemed to produce its effects more readily even than the other.

Thus we have another pleasing result of the liberality of the Government in this matter, as the British manufacturer is now placed on an equal footing with the foreign, the necessity for protecting duties done away, and the price greatly reduced to the public.

Spiritus Etheris Nitrosi should now occupy attention, but the length of the preceding remarks compel a postponement to a future opportunity.

Mr. Macfarlan then presented specimens of ether and chloroform prepared from the methylated spirit.—*Trans. North Brit. Pharm. Society, in London Pharm. Jour.*, January 1, 1856.

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#### ON AMYLIC ALCOHOL.

By L. PASTEUR.

Crude amylic alcohol consists for the most part of two chemically similar bodies, which however are distinct. The atoms in the one have a different arrangement from those of the other. One is active in polarized light, the other passive.

The compounds of active amylic alcohol are all active, those of the inactive are also inactive. The proportions in which the two kinds occur together varies according to the mode of preparation of the alcohol. The crude oil produced by the fermentation of the juice of beet-root contains one-third of the active and two-thirds of the inactive alcohol; the crude oil from the fermentation of molasses consists of the two alcohols in nearly equal proportions. The two alcohols cannot be separated by distillation; the author prepared them for the sulphamylate of baryta. A very large quantity of this salt is prepared from the crude oil. The purified crystals exhibit no difference in appearance or chemical composition, but it is soon seen that a portion of them dissolves

$2\frac{1}{2}$  times as easily as the other. The most readily soluble portion contains the compound of the active alcohol, which, when prepared from this compound, rotates the plane of polarization about  $20^\circ$  to the left in a cylinder of 50 centims. in height, whilst that prepared from the less soluble baryta-salt possesses no rotatory power.

These two alcohols are extremely interesting, because we may treat one in the same way as the other, without producing any essential difference. The author has found a difference in the specific gravity. The active alcohol is about one-hundredth heavier than the other. From this it follows that an equal volume of the two bodies cannot contain the same number of atoms. The active boils at  $260^\circ.6$  to  $262^\circ.4$  F., the inactive at  $264^\circ.2$  F. Mixtures of the two boil at intermediate temperatures.

The separation of the two baryta-salts only requires 15 to 20 recrystallizations. The salt of the active alcohol is concentrated in the mother-liquor. The difficulties of the separation lie entirely in the isomorphism of the two salts. Hence the two salts unite in all proportions, and it is only the great difference in their solubility that causes their separation. This isomorphism is exceedingly deserving of notice, because it proves that a dissymmetry may be present and not present in the molecular state of two salts, whilst *à priori* we should conclude that this would constitute an insuperable barrier to the union of the molecules of two salts, so as to crystallize together. The author long supposed that he had to do with two completely different salts of sulphamate of baryta, until he convinced himself that it was otherwise. *Chem. Gaz. from Comptes Rendus.*

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## ON SOME SACCHARINE SUBSTANCES.

By M. BERTHELOT.

1. The Australian manna (Manna of the Eucalyptus) contains a crystallizable sugar, which was prepared in 1843 by Johnston, and regarded by him as grape-sugar,  $C^{12}H^{12}O^{12} + 2HO$ . According to Berthelot's experiments, this is a peculiar kind of sugar, for which he proposes the name of *melitose*.

The reactions of this body agree for the most part with those of cane-sugar. It appears to consist of two isomeric bodies, of

which one is capable, and the other incapable of fermentation; the latter must be placed near sorbine.

*Melitose*, as extracted by water from Australian manna, crystallizes in extremely fine needles; it is about as soluble as mannite, and has a slight sweet taste. It rotates the plane of polarization to the right; its rotatory power (with reference to the transition-color) is  $(\alpha)_j = +88^\circ$ . It is therefore about one-fourth greater than that of cane-sugar. When crystallized at the ordinary temperature, melitose has the formula  $C^{12}H^{12}O^{12} + 2HO$ . At  $212^\circ$  F. it becomes semifluid, and loses 1 atom of water. At  $266^\circ$  F. it loses a fresh quantity of water; at a higher temperature it undergoes a change and becomes yellow, and at still higher one it diffuses the odor of caramel. When kept at  $392^\circ$  F. with muriatic acid for a long time, it is converted into a blackish-brown mass. When heated with baryta for some hours to  $212^\circ$  F., it does not acquire color, and retains its characteristic properties. Melitose does not reduce the copper from the solution of potash and oxide of copper; it only acquires this property by boiling with sulphuric acid. By this means it also loses about a third of its rotatory polarizing power, and when isolated it is uncrystallizable.

In contact with yeast it furnishes alcohol and carbonic acid. Melitose, boiled with sulphuric acid and with baryta at  $212^\circ$  F., also possesses this property. All these properties agree very closely with those of cane-sugar. But during fermentation 100 parts of melitose,  $C^{12}H^{12}O^{12} + 2HO$ , only furnish 22.2 parts of carbonic acid; 100 parts of grape-sugar,  $C^{12}H^{12}O^{12} + 2HO$ , give 44.5 parts of carbonic acid, or double the quantity. The fermented fluid contains a saccharine body, which is not acted upon in fermentation. This the author calls,—

*Eucalyne*.—Its composition, dried at  $212^\circ$  F., is  $C^{12}H^{12}O^{12}$ . Treatment with sulphuric acid does not render this body capable of fermentation. Melitose furnishes exactly half its weight of eucalyne, as proved by direct experiment. Perhaps also treatment with sulphuric acid only converts half the melitose into the sugar which reduces the copper in the test-fluid.

2. *Pinite*.—The author has received a sugar from M. Bourcier de la Rivière, from California. It is said to be derived from *Pinus Lambertiana*. It collects in concrete masses in hollows

in the trees, produced by the Indians by the application of fire to the foot of the tree. The Indians eat this sugar.

The author extracted a crystallizable matter by means of water from the crude substance. This he calls *pinite*. Its composition is  $C^{12}H^{12}O^{10}$ . It tastes nearly as sweet as sugar-candy. It is readily soluble in water, and nearly insoluble in absolute alcohol, but dissolves a little in boiling ordinary alcohol. Its specific gravity = 1.52. Its right rotation is  $(\alpha)_D = +58^\circ.6$  (with reference to the transition-color.) *Pinite* does not reduce the oxide of copper in solution of oxide of copper and potash, even after treatment with sulphuric acid. When precipitated with ammoniacal solution of acetate of lead, it furnishes a compound of the formula  $C^{12}H^{12}O^{10} + 4PbO$ . It is consequently isomeric with quercite, and is distinguished from that sugar by its crystalline form, its stronger sweet taste, and its great solubility. It is not capable of fermentation.

3. *Sugar from Cider*.—The author has extracted from certain ciders a crystallizable sugar, which is isomeric with mannite. With regard to its crystallization and solubility, it is also identical with mannite.—*Ibid*, from *Comptes Rendus*, September 1855.

#### REMARKS ON UNTINNED COPPER VESSELS.

By M. VASEY, Pharmacien of Luneville.

M. Vasey recently made an extract of the leaves of elder with the expressed, non-purified juice of the leaves according to the process of Storck of Vienna. He operated in a red copper vessel which was untinned, and perfectly free from rust. The liquid on commencing to boil was agitated with a clean iron spatula to avert the ebullition. After a few moments on withdrawing the spatula, he was surprised to see it covered with a layer of copper. At first he could not account for this result. He cleaned the spatula and again agitated the liquid with it, but this time instead of copper it was covered with a black layer, resulting probably, from the reaction of the tannin with the iron; several repetitions of this trial with a clean spatula showed no trace of copper.

M. Vasey explains this phenomenon by assuming that a part of the carbonic acid existing in the juice acted on the copper to



form carbonate, which salt was retained in solution by the rest of the carbonic acid until driven off by ebullition. The small quantity of cupreous salt is decomposed by the bright iron spatula. It follows from this that it is not proper to treat the juice of any plant in an untinned copper vessel, especially if an iron spatula is used.—*Repertoire de Pharmacie, Aout. 1855.*

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## ON WOOD OIL, A SUBSTITUTE FOR COPAIBA.

By DANIEL HANBURY.

Among the drugs that have recently appeared in the London market, I have observed one article to which I am desirous of drawing attention. It is a liquid imported in considerable quantity from Moulmein in Burmah, and offered for sale under the name of *Balsam Capivi*, but known in India as *Wood Oil* or *Gurjun Balsam*.

To Balsam of Copaiba, however, it presents so remarkable a resemblance, that, but for the locality from which it was imported, it would hardly have been noticed as anything else than Copaiba of rather unusually dark color.

In the Paris Universal Exhibition there are two samples of a similar liquid, labelled *Wood Oil*, one of them being sent among the *Materia Medica* of Canara, the other from the Tenasserim provinces. Through the kindness of Mr. Royle, specimens of each have been placed at my disposal. Though comparatively a new drug in English trade, *Wood Oil* is an article of common occurrence in the bazaars of India.

From its similarity to Copaiba, it might be supposed to have its origin in some plant nearly allied to *Copaifera*: such, however, is not the case, it being the produce of the natural order *Dipterocarpaceæ*.

The following is Roxburgh's account of the manner of obtaining it from *Dipterocarpus turbinatus*, an immense tree, native of Chittagong, Tipperah, Pegue, and other places to the eastward of Bengal.\*

“ This tree is famous over all the Eastern parts of India and the Malay

\* *Flora Indica* (ed. Carey) vol ii. p. 613.

Islands, on account of its yielding a thin liquid balsam, commonly called *Wood Oil*, which is much used in painting ships, houses, &c.

“To procure the balsam, a large notch is cut into the trunk of the tree, near the earth, (say about 30 inches from the ground), where a fire is kept up until the wound is charred, soon after which the liquid begins to ooze out. A small gutter is cut in the wood to conduct the liquid into a vessel placed to receive it. The average produce of the best trees during the season, is said to be sometimes 40 gallons. It is found necessary, every 3 or 4 weeks, to cut off the old charred surfaces and burn it afresh; in large healthy trees abounding in balsam, they even cut a second notch in some other part of the tree, and char it as the first.

“These operations are performed during the months of November, December, January and February. Should any of the trees appear sickly the following season, one or more years’ respite is given them.”

The same author also states that Wood Oil is afforded by *D. costatus* (*D. angustifolius* W. et A.), *D. alatus* Roxb. and *D. incanus* Roxb., the last mentioned being reputed to furnish the largest proportion of the best sort.

Closely allied to the Wood Oil of *Dipterocarpus* is the oleo-resin termed *Camphor Oil*, produced by *Dryobalanops Camphora* Colebr., a tree of the same natural order. For a specimen of this oleo-resin and of an analogous liquid called *Lagam Oil*, both brought from Sumatra by Dr. Junghuhn, I am indebted to the courtesy of Dr. J. E. De Vrij of Rotterdam.

Wood Oil, as imported from Moulmein, is, after filtration, a transparent dark brown liquid, of somewhat greater consistence than Olive Oil, sp. gr. of .964 and an odor and taste like copaiba, though perhaps hardly so strong. One part of it treated with two parts of alcohol sp. gr. .796, is dissolved, with the exception of a minute quantity of darkish flocculent matter, which subsides upon repose.

But its most curious property (as noticed by Mr. Charles Lowe with reference to a liquid which I suppose to have been *Wood Oil*\*) is that exhibited when it is heated in a *corked* vial to about 266° F. (130° C.†). Thus treated it becomes slightly turbid, and so gelatinous that the vial may be inverted, even

\* On a new variety of Balsam of Copaiba—*Pharmaceutical Journal*, vol. xiv. pp. 65, 66.

† Mr. Lowe says 230° F., but a much more striking effect is produced on the *Wood Oil* by the temperature I have named.

while hot, without its contents being displaced; and on cooling, the solidification is still more complete. Gentle warmth and agitation restore to a great extent its fluidity, but solidification is again produced upon the liquid being heated to 266°. Copaiba displays no such phenomenon.

According to Dr. O'Shaughnessy, when Wood Oil is heated in a retort, a yellowish white, *crystallizable*, solid substance, having many of the properties of benzoic acid, sublimes into the upper part of the vessel, to the extent of about one per cent. of the Wood Oil taken. In my own experiments, I have not detected any of this substance. It is true that when Wood Oil is heated, a scanty, opaque white sublimate condenses in the cooler part of the vessel, but this appears to arise from the condensation of a little water among the minute drops of essential oil, since it is not produced if the Wood Oil has been previously agitated with some fragments of dried chloride of calcium.

With regard to its medicinal properties, there appears to be no doubt, from an extensive set of experiments instituted by Dr. O'Shaughnessy, confirmed by trials made by other practitioners in India, that Wood Oil is nearly equally efficient with Copaiba, in the diseases in which that drug is indicated.† It may be administered as an emulsion, or in pills made up with magnesia. Dr. O'Shaughnessy has used the essential oil in doses of from 10 to 30 drops.

From the close similarity of Wood Oil to Copaiba, a mixture of the two may be anticipated; from pure Copaiba, such a mixture will probably be detected by a difference in its optical properties.—*Pharm Jour.* Jan. 1, 1856.

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#### THE PREPARATION OF BLUE PILL AND GREY POWDER.

By W. W. STODDART.

The preparation of these two most important articles, when the directions of the Pharmacopœia are strictly followed, is a very tedious process, so much so, that most druggists generally order them from a wholesale house, not thinking it worth their

† *Bengal Dispensatory* (1842), pp. 222–224.

while to compound their own. Now that a new Pharmacopœia is under consideration, and every one expected to give a hint or two if possible, I am induced to give my mode of manipulation, as I am not aware of its being followed by any one else. A most intimate and perfect division of the metal is effected in a very short time and with comparatively little trouble,—and with this recommendation, that the ingredients are in every respect the same as the Pharmacopœia formula.

*Pil. Hydrarg.*—To make this I triturate the mercury with the powdered liquorice (adding a small quantity of distilled or rose water) till the globules are quite imperceptible, the confection of roses is next added and all well mixed. The rapidity with which the liquorice “kills” the mercury is really astonishing to one accustomed to the old way of rubbing the metal with the conserve. It forms a perfectly homogeneous mass of a proper pill consistence.

*Hydrarg. cum Creta.*—For mixing this, I first put the mercury into a bottle with an equal weight of prepared chalk, and well shake them together till the metal is invisible to the naked eye, which takes place in a few minutes. I then turn it out into a large Wedgwood mortar and rub with the remainder of the chalk till the globules are no longer visible. The time consumed by these modes of operation is so short, that there can be no excuse for any one not preparing their own blue pill and grey powder, which it is obviously their duty to do, especially in a more exclusively dispensing establishment. A pound of blue pill was made as above in one hour, in which no globules were discoverable, even by a Coddington lens.

9, North Street, Bristol, Nov. 19, 1855.

[The process for making grey powder is similar to that now generally adopted by wholesale druggists, the mercury and chalk being put into a cask which is turned on an axis.—ED.]—*Lond. Pharm. Jour.* Jan. 1, 1856.

## ON THE PRODUCTION OF PALMITIC ACID FROM THE MAFURRA TALLOW.

By MM. D'OLIVEIRA PIMENTEL AND J. BOUIS.

The inhabitants of Mozambique give the name of Mafurra tallow to a fatty matter, which they extract by means of hot water from the seed of a fruit which is but little known in Europe. The simple and economical extraction of this vegetable tallow causes it to be used in the preparation of a common soap. The almonds of Mafurra, or probably Mafutra, are covered by a light red envelope, with a black spot in the middle. Each almond weighs about 0.660 grm.; the least pressure is sufficient to detach the envelope, which weighs 0.187 grm.; so that the decorticated seed weighs about 0.473 grm. The seeds are about the size of a small cacao-bean; they are flat on the inside and convex externally, and they divide easily into two parts in a longitudinal direction.

Their taste is very bitter, and the different products obtained from them obstinately retain this bitterness. The almond is hard, and when bruised exhales the characteristic odor of cacao; pressure only extracts a very minute proportion of fatty matter from it, and it is necessary to have recourse to boiling water or to solvents in order to extract the whole. The employment of ether or benzine has shown that 65 per cent. of fatty matters may be obtained from the husked seeds, and the cake, which is fit for manure, contains 4.3 per cent. of nitrogen.

With different agents the seeds furnish an extractive matter, a very bitter substance, a product which is strongly colored by alkalies, &c. The color of the fatty matter is yellowish, and its odor is that of cacao-butter; it is less fusible than tallow, and boiling alcohol dissolves it in very small quantity. Hot ether dissolves it readily, and deposits it on cooling in small stellate crystals. The alkalies saponify it with a very distinct brown color, but the greater part of the coloring matter is carried into the alkaline solution. Oxide of lead also converts it into soap, and the glycerine produced by this operation does not exhibit its saccharine character until it has been sufficiently agitated with ether, which removes the bitter matter. The fatty acids arising from the decomposition of the alkaline soaps are crystallized,

and composed of a highly-colored liquid acid, and a solid acid which constitutes 0.55 of the total weight.

The liquid acid forms a mass under the influence of hyponitrous acid, and furnishes a product analogous to elaidic acid; by dry distillation it decomposed into carburets of hydrogen and sebacic acid; with oxide of lead it forms a salt which is soluble in ether, in fact it possesses all the characters of oleic acid.

The solid acid, when pure, is perfectly white and sparkling; its point of solidification is permanent at 320.9 F., and it then forms a crystalline friable mass; its alcoholic solutions form a mass on cooling. This acid furnishes an ammoniacal salt, which is soluble with the assistance of heat, but insoluble in the cold; its nacreous potash and soda-salts are decomposed by water; its lead-salt fuses at about 229° F., and afterwards sets into an opake amorphous mass. The ether which it forms with alcohol is fusible at 75°·2 F., &c. These appear to be all the properties of the ethalic or palmitic acid indicated by MM. Dumas and Stas. Analyses of the acid, of the ether, and of the lead- and silver-salts, showed the composition of the acid to be  $C^{32}H^{32}O^4$ .

Thus palmitine is furnished in abundance by palm-oil and the Mafurra tallow, the only two vegetable substances which contain it; for we cannot take into the account the grains of coffee, which, according to M. Rochleder, contain it in small proportion.

Experiments of another kind have shown us the extreme facility with which Mafurra tallow is distilled after saponification with sulphuric acid.

This fatty matter, treated with lime like common tallow, and submitted to cold and hot presses, gave excellent results; but we think that the preference should be given to the former method, unless we can succeed in obtaining the tallow free from coloring matter.

The Mafurra seed is very abundant, and easily collected, in Mozambique, Madagascar and the Isle of Bourbon, which is not unimportant, especially at a moment when the principal substances for lighting are at such a high price. The Mafurra tallow is undoubtedly far superior to palm-oil, both for working and for the amount of solid matter which it yields.—*Chem. Gaz. from Comptes Rendus*, Oct. 29, 1855.

PROCESS FOR THE FORMATION OF A VERY SOLID CEMENT BY  
THE ACTION OF A CHLORIDE UPON OXIDE OF ZINC.

By M. SOREL.

This cement is a basic oxychloride of zinc. It is obtained by suspending oxide of zinc in the liquid chloride of the same metal, or in another chloride isomorphous with chloride of zinc, as in protochloride of iron, manganese, nickel, cobalt, &c. These chlorides may be replaced by muriatic acid.

The cement will be harder in proportion as the chloride is more concentrated and the oxide of zinc heavier. The washed residues of the manufacture of zinc-white, or common zinc-white calcined at a red heat, may be employed; the chloride of zinc should mark from  $50^{\circ}$  to  $60^{\circ}$  of Beaumé's areometer. To cause the cement to set more slowly, about 3 per cent. of borax or muriate of ammonia may be dissolved in the chloride, or the oxide may be suspended in water containing a little borax, and afterwards calcined.

The cement thus obtained may be poured into moulds like plaster; it is as hard as marble; cold, moisture, and even boiling water, have no effect upon it; it resists a heat of  $572^{\circ}$  F. without disaggregation, and the most energetic acids attack it very slowly. It is not dear, but its cost might be considerably reduced by mixing metallic, siliceous, or calcareous substances with the oxide of zinc, such as iron or brass filings, iron pyrites, blende, emery, granite, marble, and any of the hard limestones. Soft materials, such as chalk and the ochres, would not do. It will readily receive the brightest and most various colors, so as to be applicable to the formation of mosaics, and other works of great hardness and beauty; some mosaics made of it are already placed in the church of St. Etienne-du-Mont in Paris. It may also be employed in forming moulded objects, such as statuettes, medallions, bas-reliefs, &c. It answers admirably for a cement, and has been employed for several years by some of the Parisian dentists in stopping decayed teeth.

It may be used instead of oil in painting buildings. For this purpose, pure or colored oxide of zinc is suspended in water and a little size; this is applied in the same way as the ordinary size-colors, and when as many layers as are desired have been laid

on, and the last coat is dry, a little chloride of zinc, of 25° to 30° (Beaumé,) is applied with a brush. It may then be pumiced and varnished like oil-paint. This painting is very solid and inodorous; it dries instantaneously, and has the advantage of being antiseptic by virtue of the chloride of zinc.—*Ibid*, from *Comptes Rendus*.

#### A NEW PROCESS FOR ISOLATING BRYONIN, COLOCYNTHIN, AND ANALOGOUS PRINCIPLES.

By M. EMILE MOUCHON.

##### *Extraction of Bryonin.*

|                                                                       |            |
|-----------------------------------------------------------------------|------------|
| Take of Bryony root in fine powder,                                   | 250 parts. |
| “ Animal charcoal in fine powder, well<br>purified, washed and dried, | 125 “      |

Mix the bryony intimately with half of the animal charcoal, and introduce it into a conical percolator, containing the other half of the charcoal, and proceed by displacement with 500 parts of alcohol of 95 per cent., and afterwards by 225 parts of alcohol of 56° per cent. and this again by sufficient water to displace completely the first menstruum.

In this way a light, lemon-colored tincture is obtained, strongly charged with the bitter principle of the bryony, and so active that eight drops, when taken by the author, produced a decided purgative effect.

By spontaneous evaporation in flat capsules, a second product is obtained of a light yellowish color, having an extreme bitterness, soluble in water and alcohol, insoluble in sulphuric ether, unalterable by the alkalis as well as by chlorine, soluble in sulphuric acid with the production of a blue color, etc. It is colored green with disengagement of ammonia by heat, is precipitated white by nitrate of silver, sub-acetate of lead and protonitrate of mercury, &c., and in fact, behaves just as the pure bryonin, resulting from the processes of Brandes and Dulong.

The yield is about a sixteenth of the bryony employed. It purges more or less powerfully, according as it is taken, in the liquid form or in pills, two grains in the liquid form having produced four evacuations.



*Extraction of Colocynthin.*

Take of Colocynth in very fine powder, 125 parts.

“ Purified animal charcoal, 60 “

Proceed as directed for bryonin, until 250 parts of concentrated alcoholic tincture is obtained.

Evaporate this spontaneously in flat dishes to perfect dryness. The product is friable and pulverizable; it is garnet colored, its bitterness is insupportable, its solubility in water and alcohol is like that of bryonin, and like the latter, insoluble in ether, Liebig's statement to the contrary notwithstanding.

The purgative property of this colocynthin is a little more active than that of bryonin, from the author's experience, as in a vigorous adult, it purged strongly in a dose of 10 centigrammes ( $1\frac{1}{2}$  grains), especially when in the liquid form; and for children from  $2\frac{1}{2}$  to 5 centigrammes ( $\frac{3}{8}$  to  $\frac{3}{4}$  of a grain).

If it is desirable to have these principles in a state of great purity, the above described product should be dissolved in strong alcohol, and treated with a little animal charcoal, which removes a minute quantity of foreign matter; but this purification is unnecessary in a medical point of view.

Colocynth loses four-fifths of its weight by being deprived of its seeds, it being necessary to take 20 ounces of the fruit to get four ounces of the powder.

Colocynthin constitutes exactly a thirty-second part of the entire fruit, or about half an ounce to the pound, *av.*

M. Mouchon believes, that in the form presented by his process, these principles are destined to play an important part in the therapeutics of these drugs, and he believes, that by carrying out his process with gentian, centaury, wormwood, menyanthes, columbo, holly, etc., that the several principles which give them bitterness and activity, may be rendered equally available.

—*Repertoire de Pharmacie*, Nov., 1855.

ON A SIMPLE MEANS OF MAKING LABELS FOR VESSELS TO BE KEPT IN THE CELLAR, WHICH ARE NOT ALTERABLE BY DAMP.

By MR. T. A. QUEVENNE.

Most pharmacutists use labels painted in oil colors, which is very well, some varnish the labels, and some use a paste contain-

ing corrosive sublimate. These last plans have their advantages, but are, I believe, inferior to the following, which is recommended for its simplicity and readiness.

In place of paper, take a little band of adhesive plaster, write on its back as though it were paper. If the plaster is soft, the band will stick without heating, otherwise it should be gently heated; and the durability of the label is augmented when the plaster by this means is made to penetrate the material upon which it is spread.

I presented to the Society of Pharmacy on the 6th of June, 1855, several specimens, which had been in the cellar since the 1st of June, 1851, without being disturbed. Though covered with mould, this was readily removed by a brush, and the writing left perfectly legible.

A label of this kind was kept under water without the tissue being altered, although it is loosened and the writing rendered paler. The latter inconvenience is overcome by using, in place of ordinary ink, a varnish colored with Chinese vermilion. The use of these labels is not new, as they have been in use in the hospitals for ten years past.—*Repertoire de Pharm.* July, 1855.

#### ON PAPYRUS, BONAPARTEA, AND OTHER PLANTS WHICH CAN FURNISH FIBRE FOR PAPER PULP:

By CHEVALIER DE CLAUSSEN.

The paper-makers are in want of a material to replace rags in the manufacture of paper, and I have therefore turned my attention to this subject, the result of which I will communicate to the Association. To make this matter more comprehensible, I will explain what the paper-makers want. They require a cheap material, with a strong fibre, easily bleached, and of which an unlimited supply may be obtained. I will now enumerate a few of the different substances which I have examined for the purpose of discovering a proper substitute for rags. Rags containing about 50 per cent. of vegetable fibre mixed with wool or silk are regarded by the paper makers as useless to them, and several thousand tons are yearly burned in the manufacture of prussiate of potash. By a simple process, which consists in boiling these

rag in caustic alkali, the animal fibre is dissolved, and the vegetable fibre is available for the manufacture of white paper pulp. Surat, or Jute, the inner bark of *Cochorus indicus*, produces a paper pulp of inferior quality bleached with difficulty. Agave, *Phormium tenax*, and Banana or plantain fibre (Manilla hemp) are not only expensive, but it is nearly impossible to bleach them. The Banana leaves contain forty per cent. of fibre. Flax would be suitable to replace rag in paper manufacture, but the high price and scarcity of it, caused partly by the war, and partly by the injudicious way in which it is cultivated, prevents that. Six tons of flax straw are required to produce one ton of flax fibre, and by the present mode of treatment all the woody part is lost. By my process, the bulk of flax straw is lessened by partial clearing before retting, whereby about 50 to 60 per cent. of shoves (a most valuable cattle food) are saved, and the cost of the fibre reduced. By the foregoing it will be seen that the flax plant only produces from 12 to 15 per cent. of paper pulp. All that I have said about flax is applicable to hemp, which produces 25 per cent. of paper pulp. Nettles produce 25 per cent. of a very beautiful and easily-bleached fibre. Palm-leaves contain 30 to 40 per cent. fibre, but are not easily bleached. The Bromeliacæ contain from 25 to 40 per cent. fibre. *Bonaparteia juncoides* contains 35 per cent. of the most beautiful vegetable fibre known; it could not only be used for paper pulp, but for all kinds of manufactures in which flax, cotton, silk, or wool are employed. It appears that this plant exists in large quantities in Australia, and it is most desirable that some of our large manufacturers should import a quantity of it. The plant wants no other preparation than cutting, drying, and compressing like hay. The bleaching and finishing it may be done here. Ferns give 20 to 25 per cent. fibre, not easily bleached. Equisetum from 15 to 20 per cent. inferior fibre, not easily bleached. The inner bark of the lime-tree (*Tilia*) gives a fibre easily bleached, but not very strong. Althea and many Malvaceæ produce from 15 to 20 per cent. paper pulp. Stalks of beans, peas, hops, buckwheat, potatoes, heather, broom, and many other plants contain from 10 to 20 per cent. of fibre—but their extraction and bleaching present difficulties which will probably prevent their use. The straws of the Cereales cannot

be converted into white paper pulp after they have ripened the grain, the joints or knots in the stalks are then so hardened that they will resist all bleaching agents. To produce paper pulp from them, they must be cut green before the grain appears, and this would probably not be advantageous. Many grasses contain from 30 to 50 per cent. of fibre, not very strong, but easily bleached. Of indigenous grasses, the Rye grass contains 35 per cent. of paper pulp., the Phalaris 30 per cent., Arrenatherum 30 per cent., Dactylis 30 per cent., and Carex 30 per cent. Several reeds and canes contain from 30 to 50 per cent. of fibre, easily bleached. The stalk of the sugar-cane gives 40 per cent. of white paper pulp. The wood of the Coniferæ gives a fibre suitable for paper pulp. I made this discovery accidentally in 1851, when I was making flax cotton in my model establishment at Stepney, near London. I remarked that the pine-wood vats in which I bleached, were rapidly decomposed on the surface into a kind of paper pulp. I collected some, and exhibited it in the Great Exhibition—but as at that time there was no want of paper material, no attention was paid to it. The leaves and top branches of Scotch fir produce 25 per cent. of paper pulp. The shavings and saw dust of wood from Scotch fir gives 40 per cent. pulp. The cost of reducing to pulp and bleaching pine-wood, will be about three times that of bleaching rags. As none of the above-named substances or plants would entirely satisfy on all points the wants of the paper-makers, I continued my researches, and at last remembered the papyrus (the plant of which the ancients made their paper), which I examined, and found to contain about 40 per cent. of strong fibre, excellent for paper, and very easily bleached. The only point which was not entirely satisfactory, was relative to the abundant supply of it, as this plant is only found in Egypt. I directed, therefore, my attention to plants growing in this country; and I found, to my great satisfaction, that the common rushes (*Juncus effusus*, and others) contain 40 per cent. of fibre, quite equal, if not superior to the papyrus fibre, and a perfect substitute for rags in the manufacture of paper, and that one ton of rushes contains more fibre than two tons of flax straw.—*Pharm. Journ.*, Nov., 1855.

ON THE HANCORNIA SPECIOSA, ARTIFICIAL GUTTA PERCHA,  
AND INDIA-RUBBER.

By CHEVALIER DE CLAUSSEN.

In the course of my travels as botanist in South America, I had occasion to examine the different trees which produce the india-rubber, and of which the *Hancornia speciosa* is one. It grows on the high plateaux of South America, between the tenth and twentieth degrees of latitude south, at a height from three to five thousand feet above the level of the sea. It is of the family of the Sapotaceæ, the same to which belongs the tree which produces gutta percha. It bears a fruit, in form not unlike a bergamot pear, and full of milky juice, which is liquid india-rubber. To be eatable, this fruit must be kept two or three weeks after being gathered, in which time, all the india-rubber disappears, or is converted into sugar, and is then in taste one of the most delicious fruits known, and regarded by the Brazilians (who call it Mangava) as superior to all other fruits of their country. The change of india-rubber into sugar, led me to suppose that gutta percha, india-rubber, and similar compounds contained starch. I have therefore tried to mix it with resinous or oily substances, in combination with tannin, and have succeeded in making compounds which can be mixed in all proportions with gutta percha or india-rubber without altering their characters. By the foregoing it will be understood, that a great number of compounds of the gutta percha and india-rubber class may be formed by mixing starch, gluten, or flour with tanning and resinous or oily substances. By mixing some of these compounds with gutta percha or india-rubber, I can so increase its hardness that it will be like horn, and may be used as shields to protect the soldiers from the effect of the Minié balls, and I have also no doubt that some of these compounds, in combination with iron, may be useful in floating batteries and many other purposes, such as the covering the electric telegraph wires, imitation of wood, ship-building, &c. —*Ibid.*

## ON THE PREPARATION AND PURIFICATION OF HIPPURIC ACID AND ITS COMPOUND WITH OXIDE OF ZINC.

By D. J. LÖWE.

In order to obtain hippuric acid directly from the urine, the author mixes fresh urine with an excess of sulphate of zinc, and evaporates it, together with the precipitate of phosphate and basic carbonate of zinc produced by the addition of the zinc-salt, to one-sixth or one-eighth of the original volume. This is quickly filtered; the precipitate is washed on the filter with a little hot water, and the filtrate decomposed by means of dilute sulphuric or muriatic acid. After this operation, the entire fluid solidifies into a white jelly of hippuric acid, in a state of purity which is not obtained by any other known method. It is collected upon a filter, and washed with cold water as long as the drops passing are of a yellowish color; it is afterwards dried by pressing between several folds of blotting-paper. By this process all that is necessary to obtain the acid in large crystals, is to recrystallize it. As it is not always possible to obtain large quantities of fresh urine, it is advisable, especially in the hot season, to pour it into tall vessels of stone-ware, into which a sufficient quantity of a solution of sulphate of zinc in water, or dilute muriatic acid, has been previously put.

To purify a colored hippuric acid, we may avail ourselves of its behaviour towards metallic zinc, which is cut into small pieces, and boiled with the solution of the acid. The metal is strongly attacked with evolution of hydrogen. The solution acquires a slight yellowish color, and when the salt is completely formed, it solidifies on cooling into a thick crystalline jelly. If towards the close of the operation, when the metallic zinc is but faintly attacked, a little freshly-calcined animal charcoal be added to the boiling fluid, and this is then filtered, and the filtrate allowed to run into dilute sulphuric or muriatic acid, the hippuric acid separates in beautiful white crystals. It is only when a considerable portion of the acid remains uncombined, that it still retains a slight yellowish color after the precipitation.

When the quantity of acid to be purified is considerable, this operation is rather tedious, even when a small addition of an electro-negative metal (such as platinum or lead) has been made

to the zinc. With large quantities the acid is dissolved in as little water as possible, and neutralized with carbonate of soda; to this solution a slight excess of pure sulphate of zinc is added, and it is then boiled for a short time with animal charcoal, and filtered into a dilute muriatic acid, by which the hippuric acid is separated in colorless crystals. A slight excess of carbonate of soda is not injurious; on the contrary, the basic carbonate of zinc holds a portion of the coloring matter, and consequently facilitates the decolorization.

*Hippurate of Zinc*, which is formed on the addition of sulphate or chloride of zinc to the solution of a hippurate, or by the boiling of metallic zinc with an aqueous solution of hippuric acid, has the formula  $C^{18} H^8 NO^5, ZnO + 5HO$ . It is soluble in 53.16 parts of water, and in 60.5 parts of alcohol of spec. grav. 0.82 at the temperature of  $63^{\circ}.5 F.$ , and in 4 parts of boiling water. In boiling alcohol it dissolves still more readily. Cold and boiling ether scarcely dissolve it. At a high temperature it melts, and like free hippuric acid, when submitted to dry distillation, first acquires a red, and afterwards a black color; and lastly, when long exposed to a red heat, it is completely decomposed, giving off aromatic vapors of nitrobenzole, and leaving ashes of oxide of zinc.—*Chem. Gaz.*, Oct. 15, 1855, from *Journ. für Prakt. Chem.*, lxx. p. 369.

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#### ON A PROCESS FOR OBTAINING LITHOGRAPHS BY THE PHOTOGRAPH PROCESS.

By PROFESSOR RAMSEY.

Professor Ramsey described a process by which Mr. Robert M'Pherson, of Rome, had succeeded in obtaining beautiful photolithographs, specimens of which had been hung up in the Photograph Exhibition in Buchanan street. The steps of the process are as follows: 1. Bitumen is dissolved in sulphuric ether, and the solution is poured on an ordinary lithographic stone. The ether quickly evaporates, and leaves a thin coating of bitumen spread uniformly over the stone. This coating is sensitive to light, a discovery made originally by Mr. Niepce, of Chalons. 2. A negative on glass or waxed paper, is applied to the sensitive coating of bitumen, and exposed to the full rays of the sun

for a period longer or shorter, according to the intensity of the light, and a faint impression on the bitumen is thus obtained. 3. The stone is now placed in a bath of sulphuric ether, which almost instantaneously dissolves the bitumen, which has not been acted upon by light, leaving a delicate picture on the stone, composed of bitumen on which the light has fallen. 4. The stone after being carefully washed, may be at once placed in the hands of the lithographer, who is to treat it in the ordinary manner with gum and acid, after which, proofs may be thrown off by the usual process. Prof. Ramsey then proceeded to state that the above process, modified, had been employed with success to etch plates of steel or copper, without the use of the burin : 1. The metal plate is prepared with a coating of bitumen, precisely in the manner noticed above. 2. A positive picture on glass or paper is then applied to the bitumen, and an impression is obtained by exposure to light. 3. The plate is placed in a bath of ether, and the bitumen not acted upon by light is dissolved out. A beautiful negative remains on the plate. 4. The plate is now to be plunged into a galvano-plastic bath, and gilded. The gold adheres to the bare metal but refuses to attach itself to the bitumen. 5. The bitumen is now removed entirely by the action of spirits and gentle heat. The lines of the negative picture are now represented in bare steel or copper, the rest of the plate being covered by a coating of gold. 6. Nitric acid is now applied as in the common etching process. The acid attacks the lines of the picture formed by the bare metal, but will not bite into the gilded surface. A perfect etching is thus obtained.—*Pharm. Journ.*, Nov., 1855.

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#### ON ALLOYS OF IRON AND ALUMINIUM.

By PROFESSOR CALVERT.

Messrs. Calvert and Johnson, of Manchester, have succeeded in preparing the following alloys of iron and potassium : 1st alloy : four equivalents of iron, 1 ditto of potassium. 2d alloy : 6 equivalents of iron, 1 ditto of potassium. These alloys were prepared with a view of solving one of the great chemical and commercial questions of the day—namely, that of rendering iron less oxidable when exposed to a damp atmosphere ; as these gentlemen believe



that no kind of coating can be discovered which will resist the constant friction of water, as is the case with iron steamers. They have also succeeded in producing two new alloys, composed of iron, combined with that most valuable and extraordinary metal, aluminium, lately obtained by M. St. Claire Deville. These two alloys are composed as follows : 1st. 1 equivalent of aluminium ; 5 ditto of iron. 2d. 2 equivalents of aluminium ; 3 ditto of iron. The last alloy presents the useful property of not oxidizing when exposed to a damp atmosphere, although it contains 75 per cent. of iron.—*Ibid.*

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## Varieties.

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*On Perfumery.* By SEPTIMUS PIESSE.

(Continued from page 86.)

### POMADES AND OILS.

The name of pomatum is derived from *pomum*, an apple, because it was originally made by macerating over-ripe apples in grease.

If an apple be stuck all over with spice, such as cloves, then exposed to the air for twenty-four hours or more, and afterwards macerated in purified melted lard, or any other fatty matter, the grease will become perfumed. Repeating the operation with the same grease several times produces real "pomatum."

According to a recipe published more than a century ago the form given is :—"Kid's grease, an orange sliced, pippins, a glass of rose-water, and half a glass of white wine, boiled and strained, and at last sprinkled with oil of sweet almonds." The author, Dr. Quincy, observes that "the apple is of no significance at all in the recipe," and, like many authors of the present day, concludes that the reader is as well acquainted with the subject as the writer, and therefore considers that the weights or bulk of the materials in his recipe are, likewise, of no significance. Unguent, pomatum, ointment, are synonymous titles for medicated and perfumed greases, according to the ancient writers. Among biblical interpreters, the significant word is mostly rendered "ointment;" thus we have in Prov. xxvii. 9, "Ointment and perfume rejoice the heart:" in Eccles. ix. 8, "Let thy head lack no ointment."

Perfumers, acting upon their own or Dr. Quincy's advice, pay no regard to the apples in the preparation of pomatum, but make it by perfuming

lard or suet, or a mixture of wax, spermaceti, and oil, or some of them or all blended to produce a particular result, according to the name that it bears.

The most important thing to consider in the manufacture of pomatum, &c., is to start off with a *perfectly inodorous* grease, whatever that grease may be.

Inodorous lard is obtained thus:—Take, say 28 lbs. of *perfectly fresh* lard, place it in a well-glazed vessel, that can be submitted to the heat of a boiling salt-water bath, or by steam under a slight pressure; when the lard is melted, add to it one ounce of powdered alum and two ounces of table salt; maintain the heat for some time, in fact till a scum rises, consisting in a great measure of coagulated proteine compounds, membrane, &c., which must be skimmed off; when the liquid grease appears of a uniform nature it is allowed to grow cold.

The lard is now to be washed. This is done in small portions at a time, and is a work of much labor; the result, however, repays the time bestowed. About a pound of the grease is now placed on a slate slab a little on the incline, a supply of good water being set to trickle over it; the surface of the grease is then constantly renewed by an operative working a muller over it precisely as a color-maker grinds paints in oil. In this way the water removes any traces of alum or salt, also the last traces of nitrogenous matter. Finally, the grease, when the whole is washed in this way, is re-melted, the heat being maintained enough to drive off any adhering water. When cold it is finished.

Although purifying grease in this way is troublesome, and takes a good deal of time, yet unless done so, is totally unfit for perfuming with flowers, because a bad grease will cost more in perfume to cover its *mal odeur* than the expense of thus deodorizing it. Moreover, if lard be used that “smells of the pig” it is next to impossible to impart to it any delicate odor; and if strongly perfumed by the addition of ottos the unpurified grease will not keep, but quickly becomes rancid. Under any circumstances, therefore, grease that is not *perfectly inodorous* is a very expensive material to use in the manufacture of pomades.

In the South and flower-growing countries, where the fine pomades are made by ENFLEURAGE, or by MACERATION (see vol. 2d, (3d series, 1854) pag. 273 of this Journal) the purification of grease for the purpose of these manufactures is of sufficient importance to become a separate trade.

The purification of beef and mutton suet is in a great measure the same as that for lard: the greater solidity of suets requires a mechanical arrangement for washing them of a more powerful nature than can be applied by hand labor. Mr. Ewen, who is undoubtedly the best fat purifier in London employs a stone roller rotating upon a circular slab; motion is given to the roller by an axle which passes through the centre of the slab, or rather stone bed, upon which the suet is placed; being higher in the centre than at the sides, the stream of water flows away after it has once passed over

the suet; in other respects the treatment is the same as for lard. These greases used by perfumers have a general title of "body," tantamount to the French nomenclature of *corps*; thus we have pomades of hard corps (suet), pomades of soft corps (lard). For making *extraits*, such as *extrait de violette*, *jasmin*, the pomades of hard corps are to be preferred, but when scented pomade is to be used in fabrication of unguents for the hair, pomades of soft corps are the most useful.

The method of perfuming grease by the direct process with flowers having already been described under the respective names of the flowers that impart the odor thereto, it remains now only to describe those compounds that are made from them, together with such incidental matter connected with this branch of perfumery not previously mentioned.

ACACIA POMADE, commonly called CASSIE POMATUM, is made with a purified body grease, by maceration with the little round yellow buds of the *Acacia Farnesiana*.

Black currant leaves, and which the French term *casse*, have an odor very much resembling cassie (acacia), are used extensively for adulterating the true acacia pomades and oils. The near similarity of name, their analogous odor (although the plants have no botanical connexion), together with the word *cassia*, a familiar perfume in England, has produced generally confused ideas in this country as to the true origin of the odor now under discussion. Cassie, casse, cassia, it will be understood now are three distinct substances; and in order to render the matter more perspicuous in future, the material will always be denominated ACACIA, if prepared from the *Acacia Farnesiana*; CASSE, when from *black currant*; and CASSIA if derived from the bark of the *Cinnamomum cassia*.

#### BENZOIN POMADE AND OIL.

Benzoic acid is perfectly soluble in hot grease. Half an ounce of benzoic acid being dissolved in half a pint of hot olive or almond oil, deposits on cooling beautiful acicular crystals, similar to the crystals that effloresce from vanilla beans; a portion of the acid, however, remains dissolved in the oil at the ordinary temperature, and imparts to it the peculiar aroma of benzoin; upon this idea is based the principle of perfuming grease with gum benzoin by the direct process, that is, by macerating powdered gum benzoin in melted suet or lard for a few hours, at a temperature of about 80° C. to 90° C. Nearly all the gum resins give up their odoriferous principle to fatty bodies, when treated in the same way; this fact becoming generally known will probably give rise to the preparation of some new remedial ointments, such as *Unguentum myrrhæ*, *Unguentum assafœtidæ*, and the like.

TONQUIN POMADE, and TONQUIN OIL, are prepared by macerating the ground Tonquin beans in either melted fat or warm oil, from twelve to twenty-eight hours, in the proportion of

|                         |        |
|-------------------------|--------|
| Tonquin beans . . . . . | ½ lb.  |
| Fat, or oil . . . . .   | 4 lbs. |

Strain through fine muslin; when cold the grease will have a fine odor of the beans.

#### VANILLA OIL AND POMADE.

|                        |        |
|------------------------|--------|
| Vanilla pods . . . . . | 1 lb.  |
| Fat or oil . . . . .   | 4 lbs. |

Macerate at a temperature of 25° C. for three or four days; finally strain.

These pomatums and oils, together with the French pomades and huiles already described, constitute the foundation of the preparations of all the best hair greases sold by perfumers. Inferior scented pomatums and oils are prepared by perfuming lard, suet, wax, oil, &c., with various ottos; the results, however, in many instances more expensive than the foregoing, are actually inferior in their odor or bouquet—for grease, however slightly perfumed by maceration or enfluerage with flowers, is far more agreeable to the olfactory nerve than when scented by ottos.

The undermentioned greases have obtained great popularity, mainly because their perfume is lasting and flowery:—

#### BEARS'-GREASE.

The most popular and "original" bears'-grease is made thus:—

|                        |                   |                            |        |
|------------------------|-------------------|----------------------------|--------|
| Huile de rose          | } of each 1/2 lb. | Lard . . . . .             | 12 lb. |
| " fleur d'orange       |                   | Acacia pomade . . . . .    | 2 lb.  |
| " acacia               |                   | Otto of bergamot . . . . . | 4 oz.  |
| " tubereuse and jasmin |                   | Otto of cloves . . . . .   | 2 oz.  |
| Almond oil . . . . .   | 14 lb.            |                            |        |

Melt the solid greases and oils together by a water-bath, then add the ottos.

Bears'-grease thus prepared is just hard enough to "set" in the pots at a summer heat. In very warm weather, or if required for exportation to the East or West Indies, it is necessary to use in part French pomatums instead of oils, or more lard and less almond-oil.

#### CIRCASSIAN CREAM.

|                               |         |                                            |         |
|-------------------------------|---------|--------------------------------------------|---------|
| Purified lard . . . . .       | 1 lb.   | Almond oil, colored with alkanet . . . . . | 2 lb.   |
| Benzoin suet . . . . .        | 1 lb.   | Otto of rose . . . . .                     | 1/2 oz. |
| French rose pomatum . . . . . | 1/2 lb. |                                            |         |

#### BALSAM OF FLOWERS.

|                               |        |                            |         |
|-------------------------------|--------|----------------------------|---------|
| French rose pomatum . . . . . | 12 oz. | Almond oil . . . . .       | 2 lb.   |
| " violet pomatum . . . . .    | 12 oz. | Otto of bergamot . . . . . | 1/2 oz. |

#### CRYSTALLIZED OIL.—(First quality.)

|                         |       |                                   |         |
|-------------------------|-------|-----------------------------------|---------|
| Huile de rose . . . . . | 1 lb. | Huile de fleur d'orange . . . . . | 1/2 lb. |
| " tubereuse . . . . .   | 1 lb. | Spermaceti . . . . .              | 8 oz.   |

#### (Second quality.)

|                      |           |                         |       |
|----------------------|-----------|-------------------------|-------|
| Almond . . . . .     | 2 1/2 lb. | Otto of lemon . . . . . | 3 oz. |
| Spermaceti . . . . . | 1/2 lb.   |                         |       |

Melt the spermaceti in a vessel heated by a water-bath, then add the oils; continue the heat until all flocks disappear; let the jars into which it is poured be warm; cool as slowly as possible to ensure good crystals; if cooled rapidly the mass congeals without the appearance of crystals. This preparation has a very nice appearance, and so far sells well; but its con

tinued use for anointing the hair renders the head scurfy ; indeed, the crystals of sperm may be combed out of the hair in flakes after it has been used a week or two.

## CASTOR OIL POMATUM.

|                           |                   |                          |                   |
|---------------------------|-------------------|--------------------------|-------------------|
| Tubereuse pomatum . . . . | 1 lb.             | Almond oil . . . .       | $\frac{1}{2}$ lb. |
| Castor oil . . . .        | $\frac{1}{2}$ lb. | Otto of bergamot . . . . | 1 oz.             |

## BALSAM OF NEROLY.

|                             |                   |                        |                   |
|-----------------------------|-------------------|------------------------|-------------------|
| French rose pomatum . . . . | $\frac{1}{2}$ lb. | Almond oil . . . .     | $\frac{3}{4}$ lb. |
| “ jasmin pomatum . . . .    | $\frac{1}{2}$ lb. | Otto of neroly . . . . | 1 drachm.         |

## MARROW CREAM.

|                       |       |                        |                       |
|-----------------------|-------|------------------------|-----------------------|
| Purified lard . . . . | 1 lb. | Otto of cloves . . . . | $\frac{1}{2}$ drachm. |
| Almond oil . . . .    | 1 lb. | “ bergamot . . . .     | $\frac{1}{2}$ oz.     |
| Palm oil . . . .      | 1 oz. | “ lemon . . . .        | 1 $\frac{1}{2}$ oz.   |

## MARROW POMATUM.

|                       |       |                          |                   |
|-----------------------|-------|--------------------------|-------------------|
| Purified lard . . . . | 4 lb. | Otto of bergamot . . . . | $\frac{1}{2}$ oz. |
| “ suet . . . .        | 2 lb. | “ cloves . . . .         | 3 drachms.        |
| Otto of lemon . . . . | 1 oz. |                          |                   |

Melt the greases, then beat them up with a whisk or flat wooden spatula for half-an-hour or more ; as the grease cools, minute vesicles of air are enclosed by the pomatum, which not only increases the bulk of the mixture, but imparts a peculiar mechanical aggregation, rendering the pomatum light and spongy ; in this state it is obvious that it fills out more profitably than otherwise.

## COMMON VIOLET POMATUM.

|                               |       |                             |       |
|-------------------------------|-------|-----------------------------|-------|
| Purified lard . . . .         | 1 lb. | Washed rose pomatum . . . . | 4 oz. |
| Washed acacia pomatum . . . . | 6 oz. |                             |       |

Manipulate as for marrow pomatum.

In all the cheap preparations for the hair, the manufacturing perfumers use the washed French pomatums and the washed French oils for making their greases. Washed pomatums and washed oils are those greases that originally have been the best pomatums and huiles prepared by enfleurage and by maceration with the flowers ; which pomades and huiles have been subjected to digestion in alcohol for the manufacture of essences for the handkerchief. After the spirit has been on the pomatums, &c., it is poured off ; the residue is then called *washed pomatum*, and still retains an odor strong enough for the manufacture of most hair greases.

For pomatums of other odors it is only necessary to substitute rose, jasmin, tubereuse, and others, in place of the acacia pomatum in the above formulæ.

## POMADES DOUBLE MILLEFLEUR.

Rose, jasmin, fleur d'orange, violet, tubereuse, &c., are all made (in winter) with two-thirds best French pomatum, one third best French oils ; in summer, equal parts.

## POMADE A LA HELIOTROPE.

|                            |                   |                              |          |
|----------------------------|-------------------|------------------------------|----------|
| French rose pomade . . . . | 1 lb.             | Huile fleur d'orange . . . . | 2 oz.    |
| Vanilla oil . . . .        | $\frac{1}{2}$ lb. | Otto of almonds . . . .      | 6 drops. |
| Huile de jasmin . . . .    | 4 oz.             | “ cloves . . . .             | 3 drops. |
| “ tubereuse . . . .        | 2 oz.             |                              |          |

## HUILE ANTIQUE.

*A la Heliotrope.*

Same as the above, substituting rose oil for the pomade.

## PHILOCOME.

The name of this preparation—which is an alliance of Greek and Latin, signifying “a friend to the hair”—was first introduced by the Parisian perfumers, and a very good name it is, for philcome is undoubtedly one of the best unguents for the hair that is made.

## PHILOCOME.—(First quality.)

|                           |                   |                            |                   |
|---------------------------|-------------------|----------------------------|-------------------|
| White wax . . . . .       | 10 oz.            | French jasmin . . . . .    | $\frac{1}{2}$ lb. |
| French rose oil . . . . . | 1 lb.             | “ fleur d’orange . . . . . | $\frac{1}{2}$ lb. |
| “ acacia . . . . .        | $\frac{1}{2}$ lb. | “ tubereuse . . . . .      | 1 lb.             |

Melt the wax in the huiles by a water-bath at the lowest possible temperature. Stir the mixture as it cools; do not pour out the philcome until it is nearly cool enough to set: let the jars, bottles, or pots into which it is filled for sale be slightly warmed, or at least of the same temperature as the philcome, otherwise the bottles chill the material as it is poured in, and make it appear of an uneven texture.

## PHILOCOME.—(Second quality.)

|                            |       |                         |                   |
|----------------------------|-------|-------------------------|-------------------|
| White wax . . . . .        | 5 oz. | Otto of lemon . . . . . | $\frac{1}{2}$ oz. |
| Almond oil . . . . .       | 2 lb. | “ lavender . . . . .    | 2 drachms.        |
| Otto of bergamot . . . . . | 1 oz. | “ cloves . . . . .      | 1 drachm.         |

## FLUID PHILOCOME.

Take 1 ounce of wax to 1 pound of oil.

## HARD OR STICK POMATUMS.

|                          |                   |                             |                   |
|--------------------------|-------------------|-----------------------------|-------------------|
| Purified suet . . . . .  | 1 lb.             | Tubereuse pomatum . . . . . | $\frac{1}{2}$ lb. |
| White wax . . . . .      | 1 lb.             | Otto of rose . . . . .      | 1 drachm.         |
| Jasmin pomatum . . . . . | $\frac{1}{2}$ lb. |                             |                   |

## ANOTHER FORM.

|                |                   |                            |           |
|----------------|-------------------|----------------------------|-----------|
| Suet . . . . . | 1 lb.             | Otto of bergamot . . . . . | 1 oz.     |
| Wax . . . . .  | $\frac{1}{2}$ lb. | “ cassia . . . . .         | 1 drachm. |

The above recipes produce WHITE BATONS. BROWN and BLACK BATONS are also in demand. They are made in the same way as the above, but colored with lamp-black or umber ground in oil. Such colors are best purchased ready ground at an artist’s colorman’s.—*Annals of Pharmacy.*

*Tannic Acid a Remedy for Chilblains.* By PROF. BERTHOLD.—The extract obtained by boiling  $1\frac{1}{2}$  oz. of pounded nut-galls with 0.5 lb. of rain-water, has an excellent action upon chilblains. The decoction may be employed as a bath, or laid upon the swellings by means of rags. The itching and burning disappear in two or three days. In old cases the remedy must be continued longer. Oak-bark may also be employed; a mixture of 1 lb. of oak-bark and 2 lbs. of water being applied as a poultice. This remedy must not be used with broken or festering chilblains.—*London Pharm. Jour. from Göttinger Gel, Aus. Polytechn. Central Blatt, 1855.*

*Emulsion of Chloroform.*—M. G. Daunecy, Pharmacien of Bordeaux, recommends the following potion as the most convenient way of administering chloroform internally, viz:

|                         |                 |
|-------------------------|-----------------|
| Take of Pure Chloroform | half a drachm   |
| Oil of sweet almonds    | four drachms    |
| Powdered Gum Arabic     | two drachms     |
| Syrup of Orange Flower  | fifteen drachms |
| Distilled water         | thirty drachms  |

M. Daunecy observes that when the chloroform is not pure, and contains alcohol, it forms a cloudy mixture with the almond oil. Sulphuric ether is the only substance that is an exception to this rule.

*Compound Tonic Syrup of Orange Peel as an Anti-Dyspeptic.*

By M. BOURGEOIS.

|                            |            |
|----------------------------|------------|
| Take of Bitter orange peel | 16 drachms |
| Quassia                    | 9 drachms  |
| Catechu, bruised           | 3 drachms  |
| Gum Arabic                 | 25 drachms |

Infuse the three first substances in 130 drachms of boiling water; dissolve the gum in 50 drachms of water. Then mix the infusion with the dissolved gum, and make syrup with 300 drachms of sugar.

*Ferruginous Pills of DR. BRETONNEAU, according to M. GARDIS, Pharmacien of Villiers le Bel.*

|                                  |            |
|----------------------------------|------------|
| Take of Iron reduced by hydrogen | 250 grains |
| Sulphate of quinia               | 15 "       |
| Powdered Ginger                  | 15 "       |
| Extract of Yellow Bark           | 45 "       |
| Compound Extract of Rhubarb      | 45 "       |
| Socotrine aloes in powder        | 8 "        |
| Syrup of Saffron                 | 1 drachm.  |
| Simple syrup q. s.               |            |

Make one hundred pills, which should be preserved in a square or cylindrical bottle of blue glass, hermetically sealed.

The dose is one in the morning early, and one at bed time; after four days, take two in the morning and two at night, and continue doing so for some time. They do not constipate but act as a slight laxative.—*Repert. de Pharmacie.*

*Quick Process for Mercurial Ointment.*—M. Bernier, Pharmaceutist of Reuwez (Ardennes), recommends the following process. Take one third of the lard to be used for the ointment, heat it in a skillet of copper till it com-

mences to disengage vapors and burn, and then pour it into an earthen vessel, and place it in the cellar for ten or fifteen days. Use this lard to extinguish the mercury, employing an iron mortar, and observing to add the mercury gradually as each addition disappears. The mercury is soon perfectly extinguished when the rest of the lard is incorporated thoroughly, the whole operation requiring but an hour.—*Repertoire de Pharmacie*.

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*Anti-Gout Wine of Dr. Anduran.*

|                                                         |           |
|---------------------------------------------------------|-----------|
| Take of Colechicum bulbs collected at the proper season | 30 parts. |
| Leaves of the Ash Tree                                  | 30 “      |
| Malaga wine                                             | 500 “     |
| Macerate for eight days and filter, then add            |           |
| Tincture of Aconite                                     | 8 parts.  |
| Tincture of Digitalis                                   | 5 “       |

Take a teaspoonful morning and evening in a cup of tea for gout or articular rheumatism.—*Repertoire de Pharmacie*.

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*Spigelia Jelly*.—This elegant formula we find in the *Annuaire de Therapeutique* for 1855, taken from the *Gazette Med. de Liege*. It is recommended by M. Bonnewin as the most agreeable form of administering this favorite anthelmintic. R. Pulv. spigelia, ʒviij. ; Corsica moss, ʒiv. ; boiled in 16 ounces of rain-water until it is reduced to 10 ounces. The decoction should then be decanted into a sauce-pan containing 2½ ounces of white sugar, and again boiled down, carefully stirring with a silver spoon, until 4 ounces of jelly are obtained. It then should be strained through a sieve into a jar containing two drops of the essence of citron or earaway. This jelly is a very active anthelmintic, and so agreeable that children will seek for it with avidity. If kept in a cool place, it will remain good for some time, and its flavor may be still more improved by substituting for the sugar either the syrup of gooseberries or mulberries.—*Virginia Med. and Surg. Journal*.

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*On the Use of Liquid Caoutchouc*.—The utility of collodion, as an impermeable plaster in various cutaneous affections, is very generally acknowledged. It has, however, some disadvantages in certain cases, arising from its inelasticity, which makes its extensive application inconvenient, or inadmissible. In such cases, thin laminæ of *gutta percha*, oil silk, or adhesive plaster, are generally used. About a year since, I was presented by Mr. S. T. Armstrong with a bottle of the milk of the *Hevea* or *Caoutchouc* in the liquid form in which it exudes from the tree. It is preserved in that state by the addition of a small proportion of free ammonia, and is now introduced as an article of commerce for manufacturing purposes, and, from



my experience with it, I am compelled to call the attention of the profession to it, as a most useful contribution to our *materia medica*. It is of the color and consistency of pure milk, (if my recollections do not deceive me), but becomes transparent as soon as dry. Owing to its great elasticity, it does not contract so violently as the collodion, it adheres closely to the skin, and allows entire freedom of motion and application to any extent. In burns it has an advantage over anything I have ever used, as also in erysipelas. An acquaintance with it by surgeons will lead, I do not doubt, to many valuable improvements in surgical appliances.—*New York Journal of Medicine*.

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*Deodorizing Properties of Coffee*.—The London Medical Gazette gives the result of numerous experiments with roasted coffee, proving that it is the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. A room in which meat, in an advanced state of decomposition, had been kept for some time, was instantly deprived of all smell, on an open coffee roaster being carried through it containing a pound of coffee newly roasted. In another room, exposed to the effluvia occasioned by the clearing out of a cess-pool, so that sulphuretted hydrogen and ammonia, in great quantity, could be chemically detected, the stench was completely removed within half a minute, in the employment of three ounces of fresh roasted coffee; while the other parts of the house were permanently cleared of the same smell by being simply traversed with the coffee-roaster although the cleansing of the cess-pool continued several hours after. The best mode of using the coffee as a disinfectant, is to dry the raw bean, pound it in a mortar, and then roast the powder in a moderately heated iron plate, until it assumes a dark brown tint, when it is fit for use. Then sprinkle it in sinks and cess-pools, or lay it on a plate in the room which you wish to have purified. Coffee acid or coffee oil acts more readily in minute quantities.—*Eclectic Med. Jour.*

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*Cultivation of Liquorice in this Country*.—A correspondent of the *New York Times* (Mr. William R. Prince, of Flushing, L. I.) is of the opinion that the officinal *Glycyrrhiza glabra* may be easily cultivated in this country. He says: "The liquorice is one of the most important plants that is destined to be added to American agriculture, and merits at our hands an early adoption, on account of the facility of its culture, its great usefulness for various purposes, and for the large profit it yields to the cultivator. When the high-priced lands of England are profitably devoted to it, how much more profitable must it prove, where land is plentiful and cheap, and where, above all, as in several of the Western States, the soil is naturally permeable, free from all stones, and no manuring required. It is, indeed, mortifying to American pride, to witness the many thousands now paid to

Europe for an article like this, so simple in its culture that we ought to be the largest exporters of it, thus adding another item to our 'granary of the world.'

"It has long been extensively cultivated in Spain, and from the commencement of Queen Elizabeth's reign it has been largely grown in various parts of England."

Besides its employment in medicine, liquorice is extensively used in the manufacture of porter and other preparations containing saccharine ingredients, and its introduction into this country could not fail to be profitable. *Boston Med. and Surg. Jour.*

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*On the Artificial Preparation of Alcohol.* By M. MARX.—Berthelot has lately stated, that alcohol may be formed from olefiant gas. Marx shows that this discovery was made twenty-seven years ago by Henry Hennell. In the *Philosophical Transactions* for 1828, p. 365, there is a theory of the formation of ether, in which Hennell says, "This theory is illustrated by the employment of olefiant gas as the hydrocarbonous base; for, by combining this gas with sulphuric acid, we may form sulphovinic acid, from which we may obtain at pleasure, by varying the decomposition, either alcohol or ether."—*Jour. für Prakt. Chem.*, lxx. p. 92.

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*Castor Oil as a Mechanical Lubricant.* By ALEXANDER CHAPLIN.—In these times, when workshop economics are claiming so large a share of attention, it may be of importance to the readers of the *Practical Mechanics' Journal* to know that there is considerable advantage and economy in the use of pure castor oil as a lubricating material for machinery. For this purpose, I have found it to go at least twice as far as any other oil. The causes of this gain are, that this oil does not run out of the bearing, whilst it does not clog from viscidty, and it is entirely free from acidity of every kind. Actual experience has told me, that bearings which formerly required oiling twice or thrice a day, are kept in perfect order by one daily application of fine castor oil. As to cost, the present market price leaves, under the circumstances, a saving of 50 per cent.—*Lon. Prac. Mech. Journ.*, Oct. 1855.

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*Note on the Natural Mineral Waters of Algeria.* By SIR JOSEPH F. OLIFFE.—Amongst the valuable products of Algeria exhibited in the Palais d'Industrie, not the least worthy of study and attention is the collection of natural mineral waters of that country. No less than forty-eight specimens of chalybeate, acidulous, saline, and sulphurous waters are exhibited, derived from various springs in Algeria. Many of these spas were well known to, and frequented by the Romans, as the remains of magnificent thermæ, piscinæ, &c., still attest. At the present day most of them enjoy reputation amongst the Arabs, and the French Government have granted consider-

able sums towards the restoration of some. The sulphuro-saline springs of *Hamma Mescoutin*, in the province of Constantine, deserve special notice, not only from their efficacy, but from the fact that in these *arsenic* was first discovered; the consequence was, that the researches of Chemists were directed, in analysing mineral waters, to the presence of arsenic as a constituent, and that this mineral has been lately ascertained to exist in several of our European springs, such as Montdore and many others.—*London Pharm. Jour.*

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*On Writing Inks.* By JAMES STARK, M. D., F. R. S. E.—The author stated that in 1842, he had commenced a series of experiments in writing inks, and up to this date had manufactured 229 different inks, and tested the durability of writings made with these on all kinds of paper. As the result of his experiments, he showed that the browning and fading of inks resulted from many causes, but in ordinary inks chiefly from the iron becoming peroxygenated, and separating as a heavy precipitate. Many inks, therefore, when fresh made, yielded durable writings; but when the ink became old, the tannogallate of iron separated, and the durability of the ink was destroyed. From a numerous series of experiments, the author showed that no salt of iron and no preparation of iron equalled the common sulphate of iron, that is, the commercial copperas, for the purposes of ink-making, and that even the addition of any persalt, such as the nitrate or chloride of iron, though it improved the present color of the ink, deteriorated its durability. The author failed to procure a persistent black ink, from manganese or other metal or metallic salt. The author exhibited a series of eighteen inks, which had either been made with metallic iron, or with which metallic iron had been immersed, and directed attention to the fact that, though the depth and body of color seemed to be deepened, yet in every case the durability of writings made with such ink was so impaired, that they become brown and faded in a few months. The most permanent ordinary inks, where shown to be composed of the best blue gall-nuts with copperas and gum, and the proportions found on experiment to yield the most persistent black, were six parts of best blue-galls to four parts of copperas. Writings made with such an ink, stood exposure to sun and air for twelve months, without exhibiting any change of color, while those made with inks of every other proportion or composition had more or less of their color discharged when similarly tested. This ink, therefore, if kept from moulding and depositing its tannogallate of iron, would afford writings perfectly durable. It was shown that no gall and logwood ink was equal to the pure gall ink, in so far as durability in the writings was concerned. All such inks lost their color and faded sooner than pure gall inks, and several inks were exhibited, which, though durable before the addition of logwood, faded rapidly after logwood was added to them. Sugar was shown to have an especially hurtful action on the durability of inks

containing logwood—indeed on all inks. Many other plain inks were exhibited, and their proportions described—as gallo-sumach inks, myrobalans ink, Runge's ink,—inks in which the tannogallite of iron was kept in solution by nitric, muriatic, sulphuric, and other acids, or by oxalate of potash, chloride of lime, &c. The myrobalans ink was recommended as an ink of some promise for durability, and as the cheapest ink it was possible to manufacture. All ordinary inks, however, were shown to have certain drawbacks, and the author endeavored to ascertain by experiment, whether other dark substances could be added to inks, to impart greater durability to writings made with them, and at the same time prevent those chemical changes which were the cause of ordinary inks fading. After experimenting with various substances, and, among others, with Prussian blue and indigo dissolved in various ways, he found the sulphate of indigo to fulfil all the required conditions; and, when added in the proper proportion to a tannogallate ink, it yielded an ink which is agreeable to write with, which flows freely from the pen, and does not clog it, which never moulds, which, when it dries on the paper, becomes of an intense pure black, and which does not fade or change its color, however long kept. The author pointed out the proper proportions for securing these properties, and showed that the smallest quantity of the sulphate of indigo which could be used for this purpose, was eight ounces for every gallon of ink. The author stated that the ink he preferred for his own use was composed of twelve ounces of galls, eight ounces of sulphate of indigo, eight ounces of copperas, a few cloves, and four or six ounces of gum-arabic, for a gallon of ink. It was shown that immersing iron wire or filings in these inks, destroyed their durability as much as similar treatment destroyed ordinary inks. He therefore recommended that *all legal deeds or documents should be written with quill pens*, as the contact of steel invariably destroys more or less the durability of every ink. The author concluded his Paper with a few remarks, on copying inks, and indelible inks, showing that a good copying ink has yet to be sought for, and that indelible inks, that will resist the pencilings and washings of the chemist, and the forger, need never be looked for.—*Lond. Civ. and Arch. Jour.*, August 1855, and *Frank. Inst. Jour.*

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*On the Extraction of Metals from the Ore of Platinum.* By M. FRÉMY.—M. Frémy treated of the preparation of osmium, rhodium, and iridium, from the residues of the platinum ores. The preparation of osmium according to the old method is attended with great difficulties and actual danger. M. Frémy proposed to prepare osmium by passing atmospheric air over the residual ore, heated in a porcelain tube. The volatile osmic acid is condensed in glass balloons, and the less volatile oxide of ruthenium is found at the extremity of the heated tube. The rhodium remaining in the residual mass is separated from the other metal contained, by chlorine gas at a high temperature.—*Frank. Inst. Jour.*

*On the Polar Decomposition of Water by Frictional and Atmospheric Electricity.* By PROF. ANDREWS.—The author having drawn attention to the fact, that water had never been decomposed by the action of the common friction electricity, so as to collect the gases and exhibit them at the opposite poles, stated that the cause of the failure of the experiment was the solution of the gases in the mass of the liquid. By fusing platina wires in thermometer tubes, this difficulty is avoided, and the gases may then be obtained and collected with the same facility as in ordinary endiometric experiments. By arranging a series of such tubes, the operations may be almost indefinitely repeated. On raising an electrical kite, the author succeeded in obtaining the polar decomposition of water by atmospheric electricity. The observations were made in fine weather, when the atmosphere was not usually charged with electricity. Although the gases were easily collected and measured, from the delicate form of apparatus employed, the quantity of water decomposed in this case amounted to only one 700,000th of a grain in the hour.—*P. Inst. Journal*, Dec. 1855.

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## Editorial Department.

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CERTIFICATE OF MEMBERSHIP OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—At the last meeting of the Association a committee was appointed to get up a certificate of membership, with power to decide on the design and manner of execution. The committee having completed their labor are about distributing the certificate to the several members who have subscribed for it. The design originated with the Committee, but in perfecting it they are indebted to Mr. Robert C. Davis of Philadelphia, as well as to the artist Mr. Magee. The following is a description of the engraving.

Near the centre of the picture is a monument in honor of Pharmacy, consisting of a square pannelled base, from which rises a fluted column, surmounted by the mortar and pestle. Encircling the shaft of the column is a winding scroll, on which appear the names of Galen, Geber, Avicenna, Basil Valentine, Lemery, Baumé, Scheele, Davy, Sertuerner, Robiquet, Pereira, and Liebig. One of the panels represents an alchemist at his furnace, the other exhibits a series of pharmaceutical apparatus, the balance, gas burners, Liebig's condenser, graduated measure, 1000 gr. bottle, etc. There are four human figures; an European, a Turk, a Chinese, and an American Indian. The European is leaning gracefully with his left arm on the monument, with a book (the Pharmacopœia) in his left hand, whilst his

index finger points toward the Structure. The Turk holds in his right hand the Poppy, and *Acacia vera*, whilst his left is extended toward the horizon where a group of pyramids symbolize the East. The Chinese holds in his right hand the *Laurus camphora* and *Piper nigrum*, whilst at his feet is a pile of Chinese books, toward which he points. The American Indian, on the right of the picture, is represented as in the act of speaking, with a branch of *Cinchona* in his right hand, and his left extended toward the south, indicated in the horizon by a volcano (Cotopaxi) in the Andes, and by a Mexican teocalis. Before him on the ground is a rude wicker basket containing a variety of plants from Southern America, among which may be recognized *Ipecacuanha*, *Cinchona*, *Quassia*, *Augustura*, *Copaiba*, *Guaiacum*, *Oanella*, *Sarsaparilla* and *Jalap*; whilst around him, growing from the soil, are several well-known North American plants, as *Senega*, *Spigelia*, *Sanguinaria*, *Podophyllum*, etc.

The explanation of the picture is as follows. The European represents the scientific pharmacy of all countries; every region contributes to its *materia medica*; and his scientific art, illustrated by the illustrious individuals named on the column, has votaries in every country where European civilization has extended—without reference to nationality. The Arabian symbolizes that imperfect empirical pharmacy that pertains to Mahomedan countries. The Chinaman signifies that ultra oriental pharmacy now practiced in India, China, and Japan, embraced in the volumes before him, and which he boasts as antedating the earliest records of European science. The Indian is introduced to Americanize the picture. He is represented as saying, however valuable are the plants growing around him, and with the virtues of which he is familiar, those given by the Great Spirit to his aboriginal brethren of Tropical America, of which the basket contains a sample, are far more important and useful.

The wording of the certificate is as follows: "This is to certify that  
has been elected member of the American  
Pharmaceutical Association. In testimony whereof the signatures of the  
proper officers are hereunto affixed

Attested at

day of 18

*Secretary.*

*President.*

*V. President.*

The general effect of the whole is good, and the design appropriate to the object in view.

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PHARMACY IN BALTIMORE.—A correspondent informs us that the pharmacutists of Baltimore have held a meeting preparatory to revivifying the "Maryland College of Pharmacy," (which for several years has ceased to exert any influence in that city,) or to establishing a new institution more likely to grow into usefulness. This is good news. Baltimore possesses

some able pharmacutists, who will give character to any movement in which they may take part, and it is greatly to be desired that all such should be enlisted, and every other well disposed member of the profession who is favorable to progress, notwithstanding such may be deficient themselves. We have always believed that the movement of 1842 was too exclusive, too few were embraced in it to render it popular, and, as a consequence, it did not succeed. The object of such organizations should be to raise the status of the entire body; its fruits should not be for those already enlightened, so much as for those who desire improvement; and the prominent part taken by the more educated should be viewed, as it generally deserves to be, as their good will offering. We are far from advocating an indiscriminate admission, but every one, however small his pretensions, who has correct views of the vocation of the apothecary, should be included. We trust that the new organization will be in full operation by September next, when the American Pharmaceutical Association will meet in Baltimore, and claim fellowship through their regularly appointed delegates.

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PHARMACY IN THE DISTRICT OF COLUMBIA.—A correspondent in Georgetown, D. C., gives information that the preliminary steps towards an organization of the pharmacutists of Washington and Georgetown have been taken, and that it is proposed to apply to Congress for a charter with collegiate powers should the organization be effected. This is also good news.

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FLUID EXTRACT OF ERGOT.—A correspondent calls our attention to an oversight in the formula for fluid Extract of Ergot at page 302, of the volume for 1855, in which the author has confounded Avoirdupois and Troy weight. The strength indicated by the declaration, "that a fluid drachm represents 40 grains" would give in two pints  $256 \times 40 = 10240$  grains or rather less than two pounds Troy; so that it is probable Mr. Baker intended Troy instead of Avoirdupois, or if the latter, that he must have expressed the strength incorrectly.

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*Clinique appliquée à la physiologie et thérapeutique.* By M. LE DOCTEUR MIALHE, Pharmacien de l'Empereur, Professeur Agrégé à la Faculté de Médecine de Paris, etc. Paris, 1855, pp. 703 octavo.

We acknowledge the reception of this book from the author. It has not been possible to introduce a review of it into this number, but must content ourselves at present with a short notice of its contents. Dr. Mialhe has long directed his attention to that part of therapeutics which refers to the changes produced on medicines (organic and inorganic,) after their ingestion, which has led him to extend his investigations to embrace the physio-

logical effects consequent upon their entrance into the circulation, and the application of the facts thus arrived at, to those altered conditions which more particularly interest the pathologist.

In treating this interesting subject, M. Mialhe commences by considering together in a chapter, the phenomena of oxidation in the animal economy, which embraces, not only those instances in which vital and experimental chemistry appear to operate similarly, but those more obscure and complex processes wherein such agents as diastase, pepsin, etc. take part, and produce changes analogous to fermentation. In this chapter, the modes of action of the saliva and gastric juice are discussed. The presence of a principle in the saliva, nearly identical with diastase, discovered by the author, is announced, and its properties described as very similar to the diastase of malt. M. Mialhe finds that its action on fecula is precisely that of vegetable diastase, rendering it into dextrine and sugar, and thus bringing it to a condition fit for absorption and assimilation, and this whether the starch be in its granule or after it is cooked and the granule ruptured. The author believes that amylaceous food, acted on by the salivary ferment, in the stomach and duodenum, is the main source of the normal sugar of the economy, and in this regard, he differs from M. Bernard, who believes the liver to be a sugar secreting organ and the chief source of that substance.

The interesting questions connected with the digestion and assimilation of the protein bodies, (albumen, &c.,) are also discussed in this chapter; which concludes with a consideration of those diseased conditions in which these bodies are thrown out of the system by the alterations of the tissues and fluids, as in Bright's disease.

The *second* chapter treats of absorption in general.

The *third* chapter, the most important and extensive, treats of the absorption of medicinal and poisonous substances, that are insoluble or but little soluble, as carbon, sulphur, phosphorus, magnesia, oxide of iron, calomel, the iodides, etc., etc.

The *fourth* chapter, which is a corollary to the preceding on absorption, treats chiefly of the action of poisons and the various influences which modify their effects as taken by different individuals.

The *fifth* chapter discusses the various forms of medicines, as powders, pills, emulsions, extracts, syrups, etc. These forms, as regards their eligibility for presenting medicines to the stomach, are reviewed by the author, and many strictures drawn, which we should like to present here but for want of space. He extends the signification of Pharmacy far beyond what is usually understood by that term; thus—

1st, The knowledge which embraces the forms of medicines, and the changes which result from their treatment in course of preparation, he calls *pharmacography*.

2d. The modifications produced by the economy on ingested medicines, as regards the causes, circumstances and amount of them that are dissolved



(solution being an indispensable condition of their medicinal action,) he calls *pharmaco-chemistry*.

3d. The ultimate effects of medicines during the period of their absorption and excretion, he considers the most important of all, and calls it *pharmaco-dynamics*.

Thus understood, pharmacy might well claim to rank among the sciences, but we very much doubt the propriety of thus invading the province of the physiologist and therapist, in adding to the importance of our scientific art.

The *sixth* and last chapter is devoted to special medicines as *caustics*, *styptics*, *resicants*, *purgatives*, etc. The subject of the action of cathartics is entered upon in detail, and the different classes, as saline, resinous, oily, soluble and insoluble, fully discussed. To attempt to introduce here any one of the numerous passages which possess novelty and interest, would be of no avail in conveying to the reader a correct idea of M. Mialhe's work, but we intend, on another occasion, when more space is at command, to give several extracts that will be read with interest. How far the author is supported in many of his ingenious views in *pharmaco-dynamics*, by facts and results, it is not our province to determine, yet we cannot but believe, notwithstanding the caution so often held up, that the chemistry of the animal economy is not the chemistry of the test tube, that M. Mialhe has materially advanced the limits of observation in that wonderful and perplexing problem, the *modus operandi* of the living animal organism in reference to ingested matter.

The book is from the establishment of M. Victor Masson, Paris, and is printed in a style of unusual excellence.

*The Pharmacopœia of the United States of America.* By authority of the National Medical Convention, held at Washington, A. D. 1850. Second Edition. Philadelphia: J. B. Lippincott & Co., 1855. pp. 317. Duo-decimo.

Since the publication of the first Edition of the Pharmacopœia of 1820, the present is the first instance when it has been found necessary to issue an inter-periodical edition. The Committee of Publication have not felt justified in making additions to the work of preparations of recent origin, nor of new drugs, and have limited their labor to the correction of some few errors of the previous edition, and to a few changes (in the processes for Solutions of Nitrate of Iron and Citrate of Magnesia) which seemed to be much needed. In "accordance with an expressed wish from several respectable sources," this edition has been published in a cheaper form, so that it is within the reach of all; and it is to be desired that in the future Decennial revisions, attention will be given to this point, so essential in effecting the wide adoption of the Pharmacopœia as the authorized guide

book for the apothecary in the United States. The book is well printed, and the price but is one dollar, the previous edition being \$2.50. Every apothecary and physician should obtain a copy of it to be able to tell what are the preparations officially recognized as official.

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*Proceedings of the American Pharmaceutical Association, at the fourth Annual Meeting held in New York, Sept. 11th, 12th, 13th, 1855.* Published by direction of the Association. New York, 1855. pp. 40. Octavo.

In addition to the minutes, &c. published in this Journal for Nov. 1855, the official "proceedings" contains the Reports of several committees possessed of considerable interest, as for instance those on "Home Adulterations," and on "the law regulating the importation of drugs and medicines." The former will be found at page 126 of this number.

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OBITUARY.—MAJENDIE, BRACONNOT, JOHNSTON, BECK, QUEVENNE, HURAUT, BAGET, AND HOLLOWS.—The last few months have been marked by the deaths of many noted physicians and pharmacutists. On the 8th of October, FRANCIS MAJENDIE, the celebrated physiologist and author of Majendie's Formulary, died at Paris, after a long illness, in the 73d year of his age. He was a native of Bordeaux, and has been thirty-four years a member of the Institute. Died, at Nancy, on the 13th Jan., 1855, M. Braconnot, long known as one of the earliest investigators of proximate organic chemistry. His numerous papers are interspersed over thirty volumes of the *Journal de Pharmacie*, and relate to a great variety of subjects. On the 18th of September, Prof. J. F. W. Johnston, the distinguished Agricultural Chemist of Durham, England, died at his residence in that place. Prof. Johnston is extensively known in this country, through his popular works on Chemical subjects. Died at Albany, on the 19th of November, Dr. Theodoric Romeyn Beck, author of the *Medical Jurisprudence* that bears his name. Died at Paris, M. Theodore Quevenne, *Pharmacien en chef de la Charite de Paris*, and one of the most distinguished pharmacutists of Paris. His investigations of senega and his introduction into medical use of "iron by hydrogen" are but a tythe of his numerous contributions to the progress of Pharmacy. M. T. Huraut, and M. Baget, *Pharmaciens* of Paris, known as writers and investigators, and Wm. A. Hollows, a prominent pharmaceutical chemist of London, also should be added to the list.

THE  
AMERICAN JOURNAL OF PHARMACY.

MAY, 1856.

ON THE MEDICINAL VALUE OF THE CANTHARIS VITTATA  
AND MYLABRIS CICHORII, AS COMPARED WITH THE  
CANTHARIS VESICATORIA.

By WILLIAM R. WARNER, of Maryland.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

A peculiar neutral proximate principle, cantharidin ( $C_{10}H_6O_4$ ) is found to reside in, and render valuable as a therapeutic agent, several species of coleopterous insects.

The blistering fly is of incalculable importance, and almost any article of the materia medica could be better dispensed with.

The *Cantharis vesicatoria* of the division *Coleoptera Heteromera*s, abundant in France, Spain, and other parts bordering on the Mediterranean Sea, is chiefly employed in Europe, and especially in America, as the vesicant; although the *Mylabris* of China and the *Cantharis vittata*, the most important of the American species, possess similar valuable properties dependant upon the same proximate principle.

They have not as yet been used to any great extent on this continent. Perhaps it has not been satisfactorily proven that they are equally efficacious with the *C. vesicatoria*.

To ascertain their comparative value with the latter, it occurred to me that the most accurate and satisfactory method would be to isolate and ascertain the relative percentage of cantharidin in each.

Having made many preliminary experiments, for the purpose of discovering the most eligible method to gain satisfactorily the object in view, and having procured a quantity of the *C. vesicatoria* and *vittata* of standard quality, and the *Mylabris* through the kindness of Prof. Procter, I proceeded in the following manner with the *Cantharis vesicatoria*.

1st. 500 grains placed in a retort with a due proportion of water, and subjected to heat carefully regulated, afforded a distillate, slightly opalescent, and having the peculiar odor of the fly in a marked degree. No further separation of the oil occurred.

The distillate was then agitated with ether, the ether then separated and allowed to evaporate spontaneously. A minute residue was obtained, colorless, possessing the strong odor common to the fly, and being exposed was readily dissipated.

2d. Allowing the substance to remain in the retort, it was then boiled repeatedly in successive portions of water until every thing soluble in that menstruum was extracted.

The residue was a brown pulverulent mass, totally devoid of vesicating properties, the virtues of the fly being totally exhausted by the aqueous menstruum.

3d. This residue yielded the green oil of cantharides when treated with sulphuric ether.

4th. The decoctions previously obtained were mixed and evaporated at a temperature not exceeding  $212^{\circ}$  to nearly a solid consistency.

To this extract was added alcohol U. S. P., intimately mixed, boiled, and strained quickly.

The undissolved residue, constituting the greater part of the matter extracted by water, was of a dark brown color, tenacious, insoluble in alcohol or ether, precipitated by subacetate of lead and alcohol, acquires a sweetish odor on exposure for a short time, and is found to possess no epispastic properties.

5th. The strained alcoholic solution was then evaporated, and yielded that principal associated with cantharidin usually known as the yellow matter of cantharides. It was deliquescent, acid to litmus, soluble in alcohol and water, and has the remarkable property, when in combination with the active principle in the fly, of rendering it soluble in water and alcohol, in which menstrua in its pure state it is totally insoluble.

6th. This principle was then subjected to a moderate heat, and carefully dried so as to admit of pulverisation. Then being reduced to an extreme degree of comminution, intimately mixed with about half its weight of very fine, pure and perfectly dry animal charcoal, and moistened throughout with ether, was

allowed to remain in a covered vessel for twenty-four hours; then transferred to a small displacing apparatus and two ounces of sulphuric ether allowed to percolate. The ethereal solution was colorless, and on evaporation the residue consisted of nearly pure cantharidin, having a slight tinge of yellow which was removed by treating it with alcohol and carefully drying. The amount of cantharidin thus obtained from

A. 500 gr. of the *Cantharis vesicatoria* was gr. 2.03

B. The amount of cantharidin obtained from  
the *Cantharis vittata* in a similar manner,  
was found to be gr. 1.99

C. The *Mylabris cichorii* treated likewise yielded gr. 2.13

From a want of time and opportunity no regard could be paid to the rest of the constituents of the two last specimens operated upon, and I much regret that consequently I cannot carry the more important of my investigations to the extent I desire. Preparatory to the above results, I prepared a small quantity of cerate from the several specimens, according to our U. S. P. I prepared then a small blister of each cerate and applied them to my arm, watching closely the result.

I observed that the cerate prepared from the *Mylabris* was first to cause rubefacience, and in a shorter space of time produced the most perfect blister.

There was hardly a perceptible difference between that produced by the *C. ves.* and *C. vit.*; they were not so full, nor were they so speedily produced as that by the *Mylabris*.

The above facts, the result of careful experiment, show conclusively that the *Cantharis vittata* is but in an inappreciable degree inferior to the *C. vesicatoria*.

The difference in amount of cantharidin which they contain scarcely exceeds two per ct., and this investigation will greatly tend to corroborate the numerous statements that have been made relative to the value of the *C. vittata* as a vesicant.

That *C. vesicatoria*, was first introduced and having been long used almost universally, and found to answer every purpose, is not therefore necessary evidence of its superior efficacy, nor is it any argument that it should be used in preference to our *Cantharis*, capable of accomplishing the same service and preferable in many respects.

The *C. vittata* usually inhabiting the potato vine from June until frost, in the Middle, Western, and Southern States, is there procurable in considerable quantities, and quite adequate, I think, to the demand of our market.

In an economical point of view it is worthy of notice. The *C. vittata* can be procured at a cost of about one third, and I venture to say not exceeding one half the imported article.

Then we have an indigenous vesicating fly, capable of replacing beyond a doubt the foreign article, as regards its therapeutic applications at least.

The *Mylabris cichorii*, the subject of the third investigation was found to contain in 500 gr. 2.13 gr. of cantharidin, being 5 per ct. more than the yield of the *C. vesicatoria*.

Thus it will be seen, according to these results, that the *Mylabris* is the most valuable and powerful variety of the vesicating flies known. It can be procured at a cost 20 per. ct. less than the Spanish fly.

The *Mylabris cichorii* is an insect of about eight to five lines in length, having long elytra of a yellow hue, marked transversely with three black streaks of irregular corresponding outlines, being one of the most beautiful of the beetle tribe of insects.

It is quite abundant in China, and probably in other parts of the East Indies.

Its properties have been long known to the Chinese who have employed it from time immemorial. It is quite probable that it is the same insect referred to by Pliny and Dioscorides, in their writings.

Of the numerous advantages of the process herein adopted for procuring cantharidin, it is hardly necessary for me to allude, as they are quite apparent. The green oil so difficult to remove in the usual process, is entirely avoided, as it is left in the residue after the fly is treated with water.

Cantharidin, as I obtained it, did not present the scaly micaceous appearance, but seemed to be in minute hexagonal elongated crystals, soluble in essential oils of cinnamon, sassafras, and cloves, the fixed oils, olive and almond, and probably most of other oils. Soluble in cold ether to the extent of one part to 341.4, and its solubility but slightly increased in boiling ether. In oil of turpentine of 312°, its boiling point, it is soluble in the

proportion of 1 to 63, and from which on cooling it is precipitated in fine acicular crystals.

A very nice and efficient cerate I have prepared by digesting  $\mathfrak{z}\text{iv}$ . Pulv. Canth. vittata in oil of turpentine for twenty hours, then transferring to a percolator, and pouring upon it boiling oil of turpentine until  $\mathfrak{f}\mathfrak{z}\text{vi}$  pass through. This percolate is then, by means of a water bath, evaporated to about one eighth, and to this is added Ceræ Albæ  $\mathfrak{z}\text{ii}\text{ss}$ , Adipis  $\mathfrak{z}\text{vi}$ ; fused, intimately mixed, and continually agitated until cold, that a cerate of a homogeneous consistency may be obtained.

As a means of protecting cantharides from the mite, I have found none more efficient than oil of turpentine, or fragments of white turpentine placed amongst them.

From the extreme hygroscopic tendency of cantharides, it is highly important also, as a means of preservation, that they should especially, when in powder, be kept in close vessels to exclude moisture.

To neglect or ignorance of this important fact is to be attributed, in many cases, the too frequent deterioration and inferiority of the vesicating fly.

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#### ON THE MUTUAL ACTION OF CHROMIC ACID AND THE VOLATILE OILS.

By JOHN T. PLUMMER, M. D.

In the year 1848, while repeating some toxicological experiments for the detection of strychnia, I observed a phenomenon, of which I made a record at the time, but did not institute much inquiry into the cause of it.

I had mixed together in a glass capsule (not, as usual, sulphuric acid and strychnia, but) sulphuric acid and chromate of potassa; and, while slowly approximating a drop of a very weak solution of strychnia in alcohol, on the end of a glass rod, I thought I perceived a change in the color of the acid mixture nearest the drop, before the two came in contact. This discovery induced me to continue the drop suspended over the mixture some time longer, until I became convinced, from the extension of the discoloration, that I was not mistaken in my observation.

As the color produced was not red but *green*, I supposed it

was not strychnia but alcohol, or one of its constituents, which passed over from the drop to the acid mixture. In order to determine this point, I placed two shallow concave glasses side by side, but *half an inch* distant from each other; and into one I put some newly prepared mixture of the acid and chromate, and into the other alcohol. The alcohol maintained a quiet, well defined margin, but the edge of the acid liquid immediately began to flap, and commencing at the point nearest the alcohol, the whole mass of acid mixture gradually became green. The flapping of the margin of the acid is best seen under a magnifier.

My next object was to ascertain whether other volatile liquids would act in like manner as alcohol. Oil of peppermint was first substituted for the spirits. A violent effervescence began directly in the whole circumference of the oil, (but, on subsequent examination, I found the same thing took place independent of the acid mixture,) and the same discoloration followed as with the alcohol, until, as before, the whole body of the acid mixture became green. The surface of the acid liquid was one inch in diameter. While the change of color was going on in this case, motes could be seen, under the microscope, rapidly approaching the edge nearest the oil; and in an instant wheel about and retreat, as if shot back by electrical repulsion. This motion was perceived even at the most remote part of the acid mixture, as the discoloration proceeded backward from the oil. The oil became thicker and opaque while under the influence of the acid, but when the glass was removed from the vicinity of the acids, the oil recovered its transparency but not its proper fluidity; and finally a watery liquid separated from it, tasting like water impregnated with the oil.

The oils of lavender and sassafras behaved like alcohol as to the quietude of their margins; and, unlike the oil of peppermint, caused no flapping motion in the acid mixture, but they all produced discoloration.

From the results of a limited number of experiments, I was at first tempted to think that my acid mixture had distinguished the terebenes of Löwig from the oxygenous volatile oils, long before this author had classified the fifth group of his hydro-polycarbys into the terebene and non-terebene oils, but an extension of the experiments to the oils of lemon, orange and cu-



bebs, and to a number of oxygenous oils, did not tend to corroborate the impression.

The oil of lemon was very active, and so powerful as to cause the repulsion of comparatively large masses of undecomposed chromate of potassa in the acid mixture, at the distance of one inch or more.

The oil of orange (the genuineness of which, however, I had some reason to question) was also very energetic; and, in addition, I observed under a moderate magnifier, a phenomenon unnoticed in the cases of the other oils. It consisted in an inimitable crumpling of the acid liquid next the oil, in parallel lines at right angles with the margin of the oil; the whole outline presenting a double convexity, like the edge-view of a double convex lens. The beautiful crumplings came and went like the coruscations of the boreal aurora.

The repulsive power of the oil of cubebs was far less apparent than that of the oils just named, but the decomposing agency was very striking though slow in its action.

Oil of turpentine produced a moderate motion in the acid mixture, and finally darkened the color of it till it became almost black; but on diluting it the color became green.

The oils of origanum, of chenopodium and of gaultheria, (oxygenous oils,) occasioned more or less motion and discoloration in the acid mixture.

When the concave glasses containing the respective liquids were placed within a small fraction of an inch apart, with but a few drops of the liquid in them, and the chromate was in small blocks lying in the acid, a retreating action commenced in the acid mixture at the edge next the oil, by which the whole mass was driven along like water before wind. And what made it still more curious was that this action was not continuous, but intermittent; an interval of several seconds transpiring between the motions. While witnessing the rolling over of the blocks of chromate, all in one direction and simultaneously, with suitable respites, I could hardly forebear fancying the existence of a little army of invisible Lilliputians adjusting their shoulders to the tiny rocks, and heaving them onward with simultaneous efforts, at the proper signal.

Whatever the agency was, it is certain that the whole mass,

blocks of chromate and all, was driven to a remote part of the glass; perhaps beyond the reach of further electrical action.

These experiments look very much like proving that chemical attraction is sometimes exerted at *sensible* distances, and *very* sensible distances. But, one of the fluids being volatile, its particles may be brought within the attractive action of the sulphuric acid by the well known affinity of that acid for atmospheric vapor causing currents; and in the case of alcohol the direct affinity of the acid for that substance accounts for its greater activity. This view is corroborated, as glycerine, a non-volatile oxygenous compound, produced no action on the acid mixture; but when a small drop of alcohol was stirred up intimately with the glycerine, the change in the acid mixture soon detected its presence. (Does not this suggest that the acid mixture of chromate of potassa and sulphuric acid may serve, in many cases, to bring to light alcoholic adulterations of liquids, as well as sometimes a mixture of different oils?)

On trial with chromic acid in water, I was not successful in obtaining like results with the oils; that is, they effected no change in the acid. Does the sulphuric acid in the mixture, in consequence of its affinity for water, deprive the chromic acid of a part of its oxygen and the oils of an equivalent of hydrogen, so as to form that fluid? Be this as it may, the sulphuric acid plays an important part in the phenomena described.

*Richmond, Indiana, 3d mo. 3d, 1856.*

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## AN ESSAY ON GILLENIA TRIFOLIATA.

By WILLIAM B. STANHOPE.

*(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)*

Professor R. P. Thomas, when lecturing on *Gillenia trifoliata*, before the Class of the Philadelphia College of Pharmacy, expressed a desire that some one of the students, wanting a subject for a Thesis, would take up this article for that purpose and examine it. In compliance with this request, I have been induced to make some experiments, for the purpose of isolating, if possible, the active principle.

*Experiment 1st.* Eight ounces of the coarsely powdered cortical portion of the root was exhausted by percolation with

absolute alcohol. The tincture thus obtained was of a red color, possessing the odor and taste of the root; the result of the addition of a few drops of the tincture of chloride of iron, was a blue-black precipitate (which was not dissipated by heat.) Gelatin threw down a white precipitate, proving the presence of tannic acid.

*Experiment 2d.* The alcoholic tincture thus obtained was evaporated to the consistence of an extract; this was then treated with cold water, and the solution filtered and evaporated to a syrupy consistence, spread on glass and dried. The water took up most of the coloring matter and tannic acid, with a small portion of the active principle, which made the product assume a reddish-brown color, with an astringent and bitter taste, very deliquescent and soluble; this is impure gillenin.

*Experiment 3d.* Another process was then resorted to in order to obtain gillenin in a pure form: thus, a portion of the impure article was dissolved in water, acidulated with sulphuric acid, and magnesia added to saturation. The solution was then evaporated, and the residuum dried, powdered, digested in strong alcohol and filtered. The solution was then concentrated and dried with a gentle heat. But the result was unsatisfactory, for though deprived of tannic acid, it still contained a large quantity of coloring matter, which occasioned deliquescence.

*Experiment 4th.* The substance which remained after the alcoholic extract was treated with water, had a resinous appearance, a very bitter taste, and a marked odor of the root; this was macerated in water, acidulated with sulphuric acid for ten days and filtered, then saturated with magnesia, evaporated and dried. To this, alcohol was added for the purpose of taking up the active principle, this was filtered and the solution set aside and allowed to evaporate spontaneously. The residue was collected from off the sides and bottom of the capsule and reduced to powder.

#### PHYSICAL AND CHEMICAL PROPERTIES OF GILLENIN.

It is whitish, unalterable in the air, having a slight odor and very bitter taste, soluble in water and alcohol either cold or hot, ether, and dilute acids; neutral to test paper; concentrated nitric acid produces a blood red color, chromic acid a fine green color. No change is observable on the addition of tannic

acid ; sub-acetate of lead, caustic potash, and tartar emetic, throw down white precipitates.

*Effects of Gillenin on the human system.*—One grain was dissolved in a fluid ounce of water, and taken in doses of one drachm at intervals of fifteen minutes; the fourth dose caused much nausea and retching, though not emesis. I have no hesitation in saying, had it been taken in a dose of half a grain, it would have proved emetic. Much vertigo was occasioned by the experiment, which remained for some time. Judging from this personal experiment, the proper dose of gillenin, when emesis is desired, would be half a grain, repeated if necessary. I think an elegant mode of administering gillenin, would be in the form of the alcoholic watery extractive, or a syrup made from that corresponding in strength to that made from ipecacuanha, as in its physical as well medical properties gillenin bears a marked resemblance to that important article of the materia medica. With regard to the less important proximate principles, I may state that I found coloring matter, fatty matter, fixed oil, and wax, in the alcoholic extract.

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## PHYSICIANS AND PHARMACEUTISTS AND THEIR RELATIONS.

By J. M. MAISCH.

(Continued from page 113.)

It is a bad practice for apothecaries to undertake the treatment of diseases ; such a course has been denounced by all true practitioners of medicine and pharmacy. On the other hand, physicians who set up drug stores of their own are equally censurable. Physicians have an aversion to allowing their prescriptions to be put up at such establishments, if it be only for their not liking to have their recipes and mode of treatment criticised by other physicians whom they do not wish to consult. Such stores, therefore, are intended for the physician's own practice ; but if their practice is so large as alone to support an apothecary's establishment, however small it may be, they certainly cannot be expected to pay much attention to it. Wherefore, then, keep the store ? A clerk, however insignificant his knowledge and experience may be, if

he has learned to read his physician's hand-writing and compound the medicines he prescribes, is very often to be found at such a store, which has been commenced for the sake of money-making. Certainly any man is worth a just reward for his labor and services, but we oppose the notion of the vocation of a physician or pharmacist being only a source for making money as fast as possible; and as much as we denounce the practising of medicine by an apothecary, just as much we are opposed to the practice of pharmacy by a physician. We are aware of the fact that circumstances may compel a physician to be also in some degree an apothecary, and act as such, just as an apothecary may, in cases of emergency, be called upon to prescribe remedies without waiting for first consulting a physician. But such cases will be of rare occurrence, except in thinly populated districts and in seasons of epidemics.

Physicians and pharmacutists do not always regard their mutual and reciprocal interests. But one of the grossest misunderstandings of these interests is the demand, by the physician, of a *per centage* of the charges for medicines of his prescription. We cannot say how far such a demand exists, but we know that it does exist. It is but very seldom that this can be found out; then it is the interest of both the physician and apothecary to keep it secret, and the necessity of this secrecy already shows the meanness of such a bargain. If a physician insists on a reward of this kind for allowing his patients to get their medicines at a certain place, the apothecary may perhaps be compelled to submit to the demand, in order to win for his business the confidence of the public, and to increase the number of his customers. But will any or both these objects be really gained? We have reason to express our doubt as an answer to this question. Evidently the pharmacist wants pay for his labor and for the medicine, and we think, in most cases, he will charge in conformity with the value of the ingredients of the medicine and the amount of his labor; and such a charge we call reasonable and moderate, a compensation rightfully belonging to his skill and his devotion to the profession. Now, he either has to charge a corresponding sum more for the medicine, in order to obtain what is due to him after paying the demanded *per centage* to the prescribing physician, and then he over-charges the public,

or, without over-charging, he pays the per centage and consequently loses the reward for his labor. In both cases it is an extortion, either from the public or from the pocket of the pharmacist. We know a physician who obtains 25 per cent. of the charges for the medicines prescribed by him, and his patients have to pay one-third over the real value of the same, charges for labor, &c., included, so that the physician, who of course demands pay for his consultations and visits, may pocket the agreed upon one-fourth of it. Others we know obtain 20, 15,  $12\frac{1}{2}$  and 10 per cent. in this way. By and by the public will find out that they constantly have to pay a high price for their medicines and will call in another physician, for the first one would not allow them to carry their prescriptions somewhere else, under the plea that this was the nearest, if not the only establishment where he knew his prescriptions were put up accurately. Ultimately the taking of per centage must prove at least disadvantageous to the physician and to the apothecary also.

We have tried to give an outline of some wrongs clinging to the practice of medicine and pharmacy; in doing this, our object has been to draw the attention of physicians and apothecaries to the same, not as to something new, but as to something that demands the co-operation of both professions for its removal. Once in a while a voice has been heard in opposition to such wrongs; projects to subdue them have been published, but little notice has been taken of them. Could not the medical and pharmaceutical journals of the country take up the subject in earnest—open their pages for a discussion of these evils, and the propositions for their suppression? We repeat what we have said before:—in many cases physicians and pharmacutists do not pay much attention to their mutual and reciprocal interests. It is only by their harmonious action in general that their vocations can attain that esteem and influence in common life and in science, to which they are both entitled, and the commencement of that harmony, we think, should be a decided stand against the grossest evils, which are apt to drag science down to the dust of humbug and quackery.

*New York, December, 1855.*

## ON COMPOUND SYRUP OF IPECACUANHA AND SENEKA.

BY FREDERICK STEARNS.

To the Editor of the American Journal of Pharmacy :—

DEAR SIR,—Among the many non-official remedial agents of a local origin and use, some of them are fully worthy of more extended notice. In view of this fact, and knowing the active influence exercised by the American Journal of Pharmacy in bringing into notice preparations of this kind, I am led to submit to your consideration (and to the readers of your journal, if deemed worth the room it would occupy in its pages,) the following formula for “Jackson’s Pectoral Syrup,” as it is called here, but which bears but little resemblance to that preparation as published in Parrish’s Practical Pharmacy, page 196.

Its ingredients suggest “compound syrup of ipecacuanha and seneka,” as a proper name for it.

The formula given me was as follows :

Take of ipecacuanha *one ounce* ; seneka, *three ounces* ; refined sugar, *two pounds* ; sulphate, or muriate morphia, *sixteen grains* ; oil sassafras, *ten minims* ; make *two pints* of syrup.

In making it I pursued the following plan, which I deemed best suited to the nature of the materials used, and succeeded in forming a bright clear syrup, permanent and possessing in an active degree all of their medical efficacy. Using the official weights, macerate the ipecacuanha in coarse powder, for fourteen days, in *one pint* diluted alcohol, U. S. P., express, filter, and evaporate to *six fluid ounces* and set aside. Next digest in a suitable apparatus the seneka in coarse powder, with *ten fluid ounces* of water and *two fluid ounces* of alcohol, 85 per cent., at a heat not exceeding 104° F., for six hours, strain, express and filter, adding, if necessary, enough water to make *ten fluid ounces*. Mix with this the tincture first obtained, and dissolve in it the sugar, at a gentle heat ; strain, and while yet warm add the morphia and oil sassafras, dissolved in a very little warm alcohol.

The maximum dose is from one to two teaspoonfuls. It is a favorite prescription with very many of our physicians as an anodyne and expectorant in coughs, etc., the combined effect of

the ingredients being much greater than that resulting from the use of preparations made from either of them separately.

Truly yours,

FREDERICK STEARNS, Pharmaceutist.

*Detroit, Michigan, March 25th, 1856.*

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### ON CASTOR OIL BEANS.

By GEORGE J. SCATTERGOOD.

*(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)*

The following experiments with castor oil beans were conducted chiefly with the view of examining the similarity which was suggested might exist between their constitution and that of the kernels of the almond, (H. C. Bowers' Essay, Journ. Pharmacy, vol. xxvi. No. 3.) A few experiments were also tried to ascertain the existence of gummy matter and resin, as usually stated.

When 2 ounces of dry beans were percolated by alcohol and the tincture evaporated, a turbid oil weighing 313 grs. was obtained. The dried marc afterwards yielded to ether 154 grs., making a total of 467 grains, or 53 per cent. of impure oil.

The dried marc from the ethereal tincture, percolated by water, yielded after evaporation and subsequent treatment with boiling alcohol, a substance of a hard consistence, breaking with a conchoidal fracture, and readily soluble in water, from which it was precipitated by alcohol and sub-acetate of lead, of a light color thus indicating gummy matter.

A portion of oil obtained by strong alcohol was mixed with alcohol, ether and liquor potassæ, and agitated. The liquid separated into two portions; the lighter, of a whitish and soapy appearance; the heavier, of a reddish color. The former, upon standing, deposited a dark-looking and resinous substance, which was insoluble in ether.

By agitating an emulsion of the beans with ether, separating the heavier liquid and mixing this with alcohol, a precipitate of emulsin gradually fell. In solution this impure emulsin had an acid reaction, and produced the bitter almond odor after three days contact with amygdalin.

The beans previously percolated by ether were treated with boiling alcohol. This tincture, after evaporation, was mixed



with ether and agitated, when small crystalline grains attached themselves to the sides of the bottle. They were insoluble in cold alcohol.

The above experiment yielded so small a quantity of crystalline matter, that it was with a slight alteration repeated. After treating the beans with ether and boiling alcohol as before, the sediment which collected on cooling was removed and exhausted by cold water. This watery fluid should contain any principle existing in the seeds, which, like amygdalin, is soluble in cold water and boiling alcohol, but insoluble in cold alcohol. This aqueous liquid, however, failed to affect a solution of emulsin, and did not yield, upon evaporation, any perceptible amount of solid matter.

The peculiar odor of castor oil which is generated when the beans are bruised with water, was much more readily developed when specimens eight or ten years old were used, than when those collected last year were tried. With the former, a few minutes maceration was sufficient, but the others did not yield it after twelve hours contact with cold water. The marc left from the successive action of ether and alcohol upon the old beans, evolved a peculiar odor after three days maceration.

The distilled water of castor oil beans possessed a peculiar and nauseous odor, quite distinct from that of the oil. Its opalescence was not removed by agitation with ether. Ether did not appear to take anything from it. It was found to be decidedly purgative in doses of f.ʒss. In 4 or 5 cases in which it was tried, it operated promptly; one fluid ounce produced both purging and vomiting.

The marc which was left was cathartic in doses of 14 and 28 grains.

An ethereal tincture prepared by percolation and subsequent spontaneous evaporation until the ether was driven off, was administered in doses of f.ʒij. and f.ʒiv. in seven cases, in all of which it proved a certain and milder cathartic.

The beans, after treatment with alcohol and ether, produced no medicinal effect in the dose of 28 grains.

These experiments seem to show that these beans have a constitution differing markedly from that of the bitteralmond. The former do not appear to develop their powers until they have ac-

quired a certain age; (4 beans collected last fall having been taken in 24 hours without any marked effect). Their active principle, (if generated by contact with water,) unlike hydrocyanic acid, is not entirely driven over by distillation.

It may, however, be found hereafter, that, like many other oleaginous seeds, they undergo a peculiar and spontaneous alteration, which may result in the formation of a volatile and powerfully purgative principle.

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### ON SOLUTION OF GUTTA PERCHA.

By J. M. MAISCH.

Collodion, when applied to the skin, contracts it, and is objectionable in many cases for this reason. For the removal of its contractile power, and to impart more softness and elasticity to it, the addition of several substances has been proposed, and the admixture of some coloring matter to imitate the color of the skin. Since Dr. Graves proposed a solution of gutta percha in chloroform for the treatment of certain diseases of the skin in place of collodion, the former has been tried by physicians, and some are using it now very extensively. Being desired to prepare some, I followed the process of Dr. Geiseler, which was published in the *Archiv. d. Pharm.*, July, 1855. One part gutta percha is to be dissolved in 8 parts spirits turpentine, the solution filtered and mixed with alcohol of 90 per cent. until a precipitate ceases to appear, which must be boiled successively with alcohol and water, and afterwards well dried. Of this purified gutta percha one part may be dissolved in 12 parts of chloroform, when a clear, almost colorless solution is obtained, which has a faint smell of turpentine.

In following these directions strictly, I found that a large quantity of alcohol is necessary to precipitate the gutta percha, of which the filtered or decanted liquor deposits another quantity after standing for several days; the coloring matter is precipitated along with the gutta percha, and, though it was always deposited underneath the latter, still it wanted a mechanical separation, and some loss of the white gutta percha was unavoidable. The process of washing it by boiling in alcohol and water

is tedious, as it strongly retains some turpentine, which, though faintly, may be smelt in the chloroform solution. This solution, on standing a day, separated some white scum like cream above the milk; by this observation I was induced to try another way for preparing a light and clear solution, and was successful with the following very simple process: One part of the best commercial gutta percha was cut into small pieces, and by agitation dissolved in 12 parts of chloroform; on standing for a day all the coloring matter rises like scum to the surface, leaving the solution as clear as Dr. Geiseler's; this may then be easily drawn off to the last drop. A wide glass tube, narrower on the bottom, and so arranged that both ends may be closed by corks, is the only instrument necessary; after the separation is complete, the upper cork must be removed and the lower one loosened, so as to allow the liquid to run out slowly; thus prepared, the only loss will be some chloroform, which is insignificant when compared with the loss of material and time of Dr. Geiseler's method. The advantages of this solution over cellodion consist in the absence of the contractile power and gloss of the latter, and in the close resemblance to the skin in appearance and elasticity.

*New York, March, 1856.*

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REMARKS ON THE UNITED STATES STANDARD OF SPECIFIC GRAVITY FOR INDICATING THE STRENGTH OF ALCOHOL, AND ON THE OFFICIAL HYDROMETER.

SOUTH BOSTON, Feb. 8th, 1856.

MR. W. PROCTER, JR.

DEAR SIR,—My attention has been directed to an article on the strength of certain acids and alcohol, by A. P. Sharp, published in the Proceedings of the American Pharmaceutical Association. The instruments in use here, I think, are not constructed by Tralle's tables, as published in Ure's Dictionary of Arts. In view of the uncertainty of strength of alcohol as an article of commerce, I think you would do a great service to purchasers and those who have occasion to use the article, if you would publish in your journal the U. S. standard of specific gravity for such strengths of alcohol as are in common use. \* \* \* \*  
If there be any standard or rule based on the action of Congress,

by which, when the temperature and the specific gravity are known, the per cent. of commercial alcohol can be known, I think it will be valuable information.

A table containing such information must, of course, in addition to the specific gravity of each per cent. of alcohol, state whether the per cent. be in weight or in measure or volume. I am quite sure that the table in the U. S. Dispensatory under the head of alcohol, is not the standard by which the distillers' instruments here are made. I this day weighed a sample of alcohol, which I bought for 80 per cent. at the temperature of 60°. It is 0.834. Now, by the U. S. Dispensatory, it is nearly 85 per cent. by weight, and by Ure's tables nearly 90 per cent. by measure, of alcohol.

I think it would be desirable to know the U. S. Custom House standard for first, second, third and fourth proof spirits, and what is meant by so much above, or below proof; in other words, what are the respective specific gravities of these spirits.

If there be no standard based on the action of Congress, perhaps the usage of those who make the hydrometers for the Custom House could be obtained and published. At all events, it seems to be very desirable for me, if I am about to purchase a pipe of brandy of a given proof, or a barrel of alcohol of any given per cent., in a distant part of the country, to know what specific gravity I am entitled to receive. \* \* \* \*

Yours respectfully,

CHARLES MEAD.

[On receiving the above letter, although we had at command Prof. McCulloch's valuable "Report," we preferred to refer it to Mr. Sharp, of Baltimore, whose judicious remarks before the Association had called it forth.—EDITOR.]

BALTIMORE, April 4th, 1846.

MR. W. PROCTER, JR.

DEAR SIR,—In reply to the inquiry whether there is a United States standard for estimating the strength of spirits, I will say there is a very complete and reliable calculation made by Prof. R. S. McCulloch, and under the superintendence of Prof. A. D. Bache, U. S. Coast Survey Office.

The title of the two works published by order of Congress are as follows: "Report of the Computation of the Manual of Tables

to be used with the Hydrometer," and the "Manual for Inspectors of Spirits." The latter is divided into three parts, as follows: A table showing the true per cent., by volume, of any spirits or alcohol varying in temperature from 20 to 100° Fahrenheit. The second part is to tell the true value when the quantity or volume of the spirits is known, but the temperature being above or below the standard, 60° F. The third table is a combination of the other two.

The standard of proof is fifty per cent. by volume or measure, that is to say, one pint of absolute alcohol and one pint water makes proof spirits, which is fifteen degrees weaker than the London proof; or by Sykes' Hydrometer, specific gravity 936. Second proof is five degrees stronger, 52½ per cent. alcohol, and has a specific gravity of 931. Third proof 10 degrees stronger, 55½ per cent. alcohol, specific gravity 925. Fourth proof 15 degrees above proof, 58 per cent. alcohol, specific gravity 920, and is London proof.

The best instrument, the cheapest, and the one the United States have adopted for all the custom houses as their standard for testing the strength of spirits from one to 100 per cent., is Gay Lussac, or Tralle's hydrometer or Alcoholmeter, made by Luhme & Co. and Greiner, of Berlin. They have been tested by the most accurate balances, and found the most reliable, as the common ones, of brass, copper and silver, are liable to oxydation and corrosion, which of course affects their accuracy. They are made with a thermometer in the bulb, the degrees of which either correspond with the graduation of the instrument, or a Fahrenheit. If the former and the mercury stands at 0, and the stem indicates 80 per cent. alcohol, that is the true per cent. If it should stand at one degree below 0, the true per cent. would be 81, as the alcohol would be too cold; and if at one degree above, the true per cent. would be 79, as it would be too warm. For every degree above or below, one per cent, is to be added or subtracted.

If they have the Fahrenheit scale in the bulb, every five degrees above or below 60° makes a difference of one per cent., using the same rule as above, adding when below and subtracting when above 60°.

This instrument I think of great importance to pharmacutists.

I forgot to mention that they usually have two scales on them—Richter's scale, which shows per cent. of alcohol by weight, and Tralle's, which, as I said before, indicates the per cent. by volume.

Yours truly,

A. P. SHARP.\*

\*NOTE.—These Berlin instruments may be had in this country of Mr. Weightman, of Boston; H. Gebeles, 343 Broadway, N. Y.; Bullock & Crenshaw, 6th and Arch streets, Philada., and A. P. Sharp, at Howard and Pratt streets, Baltimore. Some of them are without the thermometer attached, but they are greatly preferable with this addition.—EDITOR AM. JOURN. PHARM.

## THE REACTION OF IODINE WITH THE ALKALOIDS.

By ROBERT F. FAIRTHORNE.

When the liquor iodinii comp. of the U. S. Pharmacopœia is added to the solution of sulphate of morphia, U. S. P., a copious reddish-brown precipitate is immediately produced. Laudanum treated in the same way produced a similar precipitate. These precipitates are soluble in alcohol. Quinia, strychnia, veratria, aconitia and atropia, dissolved in water by the addition of an acid, exhibit the same reaction with the liquor iodinii comp. as morphia.

The precipitates from aconitia, veratria, strychnia, and probably from all the alkaloids, are not dissolved by dilute acetic acid, U. S. P., dilute muriatic acid, U. S. P., or by the officinal sulphuric acid diluted with 40 times its bulk of water.

A solution of strychnia (one grain to five drachms) treated with the liq. iodinii comp. retained only a slightly bitter taste.

*Query.* Could not the above named solution of iodine be used as an antidote to some of the alkaloids, as by its penetrating properties entering the tissues of the stomach and combining with the absorbed poison, it would form an insoluble compound?

A case of poisoning by extract of belladonna, in which a similar preparation of iodine was successfully employed as an antidote, is recorded in the American Journal of Pharmacy, November number, 1855.

*Philadelphia, April, 1856.*

## TEST FOR THE PRESENCE OF ALCOHOL IN CHLOROFORM.

By WILLIAM PROCTER, JR.

Being recently engaged in some experiments for Prof. Wood, on the solubility of chloroform in water, with and without the aid of alcohol, I was struck with the greater solubility of that substance than the books admitted, when it was suggested that the chloroform might be impure. To ascertain this, its specific gravity was taken with great care, and found to be but 1.482. Suspecting alcohol to be present as the cause of this levity, it occurred to me that an oxidizing mixture of bi-chromate of potassa and sulphuric acid would indicate its presence without being interfered with by the chloroform. When a portion of the suspected chloroform was added to the deep orange colored sulpho-chromic mixture, the color soon changed and gradually became green from the formation of sulphate of chromic oxide. Another portion of the chloroform was then mixed with an equal bulk of concentrated sulphuric acid, and agitated occasionally for several hours; the acid gradually becomes discolored and brown. When, now, a part of the supernatant chloroform was added to the sulpho-chromic mixture, no change occurred after standing a week.

As this chloroform, which was made in Philadelphia, had probably been washed in water, it follows that mere aqueous treatment will not remove the last portions of alcohol, and that agitation with chloride of calcium or sulphuric acid is necessary to effect its abstraction. The latter, however, as recommended by Gregory is objectionable as giving a tendency to the chloroform to eliminate chlorine.

For medical use, however, the small percentage of alcohol present is perhaps of no account, and it is probable that the larger part of the commercial chloroform is less contaminated than the specimen tested. As corroborative of this reaction it may be observed that Dr. Plummer, of Indiana, in experimenting with the sulpho-chromic mixture on volatile oils, noticed that it was colored green by chloroform, which he believed was due to that body, whilst in reality it was the alcohol contained in it.

## ON A PROCESS FOR MAKING DENSE AND SOFT MAGNESIA.

By THOMAS WEAVER.

A ready process for the manufacture of a magnesia of this description has long been a desideratum, and the subject of frequent experiments, as it can now be obtained only in bottles at a price inconveniently high to a large class of purchasers. The researches of Mr. Thomas H. Barr, published in this Journal, vol. xxvi. page 193, are among the most useful pertaining to the study of this subject, although the products obtained by him, both by the precipitation of the carbonate from hot concentrated solutions of the carbonate of soda, and sulphate of magnesia and subsequent calcination, and that by the decomposition of the chloride at a high heat, were pronounced rather inferior in softness, though exceeding in specific gravity, and absolute amount of magnesia, the specimens of Henry's, Husband's, and Ellis' examined. Having been much interested in the experiments of Mr. Barr, I have frequently recurred to the subject, and reasoning from the known fact, that the density of the carbonate, bears a close relation to the temperature at which it is formed, have arrived at the following process for the precipitation of a carbonate, which by calcination at a proper temperature yields magnesia in a remarkably soft and elegant condition. And in offering this simple formula to pharmaceutists, it is with a hope that it may induce those having a demand for a fine quality of magnesia, to prepare it for themselves, and to attempt further improvements in its preparation, as it will be seen to possess the merit of cheapness, and may be accomplished without the use of costly apparatus.

|                                       |     |           |
|---------------------------------------|-----|-----------|
| Take of Sulphate of magnesia,         | . . | ℥iv. ʒij. |
| Bi-carbonate of soda,                 | . . | ℥iij.     |
| Nitric acid,                          |     |           |
| Carbonate of soda,                    |     |           |
| Water, of each a sufficient quantity. |     |           |

Dissolve the sulphate of magnesia in six ounces of water, add a few drops of nitric acid, and boil for fifteen or twenty minutes; then add sufficient carbonate of soda, dissolved in a little water to produce a slight precipitate, and continue boiling for some time, filter, and set aside to cool. Triturate the bi-carbonate of soda with about eight ounces of *cold* water, and add it to the cold solu-



tion of sulphate of magnesia ; after frequent agitation filter, transfer to a porcelain capsule, and boil quickly till reduced to a small bulk ; collect the precipitate on a filter, wash thoroughly, and when nearly dry, transfer to a crucible free from iron and calcine, bearing in mind the suggestion of Mr. Barr, "that a low heat just approaching to redness and long continued, will ensure a much finer product than a high heat for a short time ;" which also corresponds with my experience, some specimens being completely ruined by neglecting this precaution.

The magnesia thus prepared is very soft and velvety, of a dead white color, and a specific gravity of 3.50, or rather heavier, probably from being made in small quantity, thereby ensuring more care than would be possible if larger quantities were made.

The rationale of this process is the following : The addition of  $\text{NO}^5$  to the solution of sulphate of magnesia peroxidizes the iron present, if any, and the subsequent ebullition after precipitating a little carbonate of magnesia by the addition of the carbonate of soda precipitates the ferruginous oxide.

When cold solutions of bi-carbonate of soda and sulphate of magnesia are mixed, no precipitation occurs ; but when the mixture is boiled, carbonic acid is given off, and carbonate of magnesia of a very dense texture settles to the bottom, different in its character from that which is formed by mixing hot solutions of the sulphate and carbonate. When the carbonate in this dense form, is calcined at the low heat mentioned above, the product has the great density and the smoothness so desirable.

*Philadelphia, April, 1856.*

## REMARKS ON FLAVORING EXTRACTS.

By the EDITOR.

A correspondent having requested information relative to the recipes for making several flavoring extracts suitable for culinary use, we have deemed it not out of place to present such of them as are in our possession to the readers of the Journal, some of whom may find them available.

### *Extract of Lemon.*

|                                            |             |
|--------------------------------------------|-------------|
| Take of the Outer yellow rind of the lemon | 2 oz.       |
| Alcohol 95° (Atwood's deodorized)          | 1 pint      |
| Pure oil of lemons                         | 2 fluid oz. |

Let the lemon rind be exposed to the air until it is partially dried so as to be less aqueous—then add it to the alcohol, and after the color is extracted add the oil. If the latter does not form a clear solution at once, let it stand a day or two and filter when transparent.

Ordinary (80 per ct.) alcohol is not sufficiently concentrated for this use, but Atwood's pure alcohol has been found well adapted for the purpose, as being stronger than ordinary deodorized alcohol.

*Extract of Orange.*

|                                         |             |
|-----------------------------------------|-------------|
| Take of the Outer rind of sweet oranges | 2 oz.       |
| Alcohol 95°                             | 1 pint      |
| Recently opened oil of orange           | 2 fluid oz. |

Proceed as in the recipe for extract of lemons.

Much of the oil of orange sold is wholly unfit for this use—as it is, even when not adulterated, so prone to oxidation and loss of fragrance by exposure, that it soon becomes unfit for use. This oil should be at once introduced into bottles from the original can and sealed.

*Extract of Bitter Almonds.*

|                               |                               |
|-------------------------------|-------------------------------|
| Take of Oil of bitter almonds | 2 fluid drs.                  |
| Alcohol (Atwood's)            | a pint.                       |
| Tincture of turmeric          | $\frac{1}{2}$ drachm or q. s. |

Mix them. The directions accompanying this preparation should state that it is poisonous in large quantity.

*Extract of Rose.*

|                                      |                 |
|--------------------------------------|-----------------|
| Take of Oil of roses                 | 1 fluid drachm. |
| Hundred-leaved roses, fresh or dried | 1 oz.           |
| Deodorized alcohol                   | 2 pints         |

Bruise the rose leaves, extract them with the alcohol by percolation or by maceration and expression, and dissolve the oil in the tincture, and filter.

*Extract of Cinnamon.*

|                                      |                   |
|--------------------------------------|-------------------|
| Take of Oil of cinnamon              | 2 fluid drac.     |
| Ceylon cinnamon                      | $\frac{1}{2}$ oz. |
| Deodorized alcohol and water of each | 1 pint.           |

Mix the alcohol and water together, then add the oil of cinnamon in coarse powder and agitate occasionally for an hour or two, then pour the mixture into a small displacer in such a man-

ner that the tincture will filter through the dregs of the bark and become transparent. This preparation is infinitely better when made from the oil of Ceylon cinnamon, but the high price of that oil will probably induce the use of the oil of Cassia.

*Extract of Celery.*

This extract is employed as a condiment for meat sauces, rather than pastry. In France the leaves and fruit, or seed so called, are distilled to get a volatile oil under the name of *huile d'ache*, and the extract used there is probably an alcoholic solution of the oil of celery. The extract of celery used in this country is made from the seeds by percolating them with concentrated alcohol. The following is our recipe:

Take of Celery seed (*Apium graveolens*)      2 oz.

Deodorized alcohol, (95 per ct.)

Water, of each a sufficient quantity.

Bruise the seeds finely, put them into a small displacer, and pour the alcohol upon them until a tincture has passed, then pour on sufficient water till a pint of infusion is obtained, mix the tincture and infusion, triturate with  $\text{ʒi}$  of carbonate of magnesia and filter through paper. The filtrate will be ready for use. As made by this recipe the extract of celery has a light brown color, an agreeable odor, and a well marked taste of celery.

*Extract of Ginger.*

Take of Jamaica ginger      4 oz.

Alcohol      a sufficient quantity

Simple syrup       $\frac{1}{2}$  pint

Put the ginger in coarse powder in a displacement apparatus, and add alcohol gradually until a pint and a half of tincture has passed; to this add the syrup and mix. If properly prepared, no precipitation occurs in the resulting "extract."

*Extract of Mace.*

Take of Oil of nutmegs      2 fluid drachms

Mace in coarse powder      1 oz.

Deodorized alcohol      2 pints

Mix the oil and mace together, add them to the alcohol, and after several hours maceration filter them by displacement.

The extracts of black pepper and cayenne pepper may be made by the formula for extract of ginger; and the extract of cloves and allspice by that for extract of mace with their respective oils.

## GLEANINGS,—PHARMACEUTICAL, CHEMICAL, AND MEDICAL.

*Extract and Plaster of Belladonna.*—Mr. Thomas Southall, (Pharm. Jour. Feb. 1856,) good authority on this subject, thinks the carefully dried leaves of narcotic plants, when extracted by diluted alcohol, afford extracts superior to those obtained by the inspissation of their expressed juices. He also recommends the hydro-alcoholic extract of Belladonna, in preference to the inspissated juice for making Belladonna plaster. Ordinary extract of belladonna, when used, is softened by water with the aid of heat till of a syrupy consistence, and then sufficient alcohol added to precipitate the gum and other matter insoluble in that fluid. After filtration the alcohol is regained by distillation and the evaporation continued till the extract has a thick honey-like consistence, when it is incorporated with the proper proportion of adhesive plaster previously melted. Thus made, Belladonna plaster adheres firmly to the skin and is more readily spread.

*Comp. Fluid Extract of Tephrosia Virginiana.*—Dr. B. O. Jones of Atalanta, Georgia, recommends a preparation made by boiling eight ounces of Tephrosia Virginiana, (the plant,) and two ounces of Rumex acutus in four quarts of water till reduced to one quart and then strain. When intended to be kept, mix with an equal bulk of diluted alcohol or brandy, and half its weight of sugar, macerate for several days, and strain through muslin.

The dose of this preparation is one to two tablespoonfuls. Dr. Jones describes this medicine as a mild, stimulating tonic, having a slight action on the bowels, and the secretive organs generally," and applicable in the treatment of many diseases, especially in a certain stage of typhoid fever, where there is little use of active medicine. Dr. R. E. Griffith (*Medical Botany*, 238) says of this plant that "the roots were used by the Indians as a vermifuge, before the settlement of the country by the whites, and are a popular remedy in many parts at the present time. the mode of administration is the decoction, which is said to act powerfully, and to be as effectual as Spigelia; it has not, as far as can be ascertained, been employed in regular practice; but it deserves a fair trial, as other species are possessed of active qualities, especially of a purgative character."

*On the Therapeutic Action of the Vapor of Bi-Sulphuret of Carbon.*—Dr. Calvin G. Page (Boston Med. and Surg. Jour., page 77, 1856) recommends the vapor of bi-sulphuret of carbon to be applied externally, for neuralgic and rheumatic pain, by holding a wide-mouthed vial, containing half a drachm of that liquid, so that the vapor will be brought in contact with the part affected. The vapor produces at first a sensation of coldness, then a feeling of warmth with prickling, which rapidly increases until it can no longer be borne. Dr. Page believes it to be a valuable agent for the temporary relief of pain, and in certain cases with permanent benefit.

*Aconite and Horseradish roots.*—Robert Bentley, Prof. of Botany and Materia Medica to the London Pharmaceutical Society, in a lucid paper published in the April number of the Pharmaceutical Journal, says, "Several fatal cases of poisoning have occurred by the accidental substitution of monkshood, or, as it is commonly called, aconite root, for horseradish," and then gives a minute description of this root, accompanied by an engraving of the roots of several species of *Aconitum*. This substitution of roots, so different in appearance and sensible properties, might be wondered at, did not equally improbable mistakes occur nearer home. But a short time ago, two cases of poisoning occurred from eating the root of *Cicuta maculata*, or water hemlock, in mistake for some edible root. As *Aconite* is not found in the United States beyond the precincts of the ornamental garden, it is not likely that this mistake will occur here.

*Accidental Poisoning by Aconite.*—At the assizes of Armagh, March 7th, James M'Caull and Samuel Townley Connor, assistants in the shop of an apothecary, at Newry, were indicted for manslaughter, because through ignorance or carelessness, they had caused the death of Capt. Kent, by using tincture of aconite root for tincture of chiretta. The prisoners were found guilty, and sentenced to the punishment of four months imprisonment.

*Fecula of Colchicum Autumnale as a source of Alcohol.*—M. F. Comar an élève of the School of Pharmacy of Paris, states, (*Journ. de Pharm. Jan. 1856*) that the fresh bulb of *Colchicum*, yielded to him 21 per cent. of starch granules and that he was unsuccessful in detecting inulin, which has been announced as an ingredient of the cormus of this plant. M. Comar thinks this

large percentage of starch is worthy of attention as a source of alcohol; and by an experiment, extracted 64 centilitres ( $1\frac{1}{3}$  pint) of that fluid from 14 lb. of the fresh bulbs.

*New Test for Nux Vomica.*—Vielgruth has proposed the following simple test for nux vomica. A few grains of the substance supposed to contain nux vomica is treated with proof spirit. The tincture is evaporated to dryness, at a temperature not exceeding 95° F. A drop or two of dilute sulphuric acid is added to the residue. The whole is again exposed to the above mentioned temperature; when, if nux vomica is present, a beautiful, carmine-red color ensues. If the heat be stopped in ten or fifteen minutes, the color disappears, but will reappear with less brightness on reheating.—*London Lancet*.

*Paper containing Arsenic.*—Vohl has found in a grey kind of blotting paper, about a grain of arsenic, five sixths of a grain of copper, and one grain of oxide of lead, per sheet. Such paper should be avoided in filtration, especially by the toxicologist. He attributed the presence of the arsenic to Schweinfurt green dye in some of the rags used to make the paper.

*Aluminium as a substitute for Silver.*—M. Regnault, of the imperial porcelain manufactory at Sevres, does not believe that aluminium will meet the expectations that have been created in its favor as a substitute for silver. He thinks it difficult to procure it pure; that in the Universal Exposition, containing over 10 per cent. of other metals, and its color is affected by them. It is extremely brittle, not easily drawn, and is an exception to the general atomic theory. Some spoons and forks seen at Bailey & Kitchen's, Philadelphia, made from French aluminium, present a decided contrast to silver, being more on the Britannia ware colour.

*Oleo-Margarate of Zinc as a substitute for Lead Plaster.*—M. de Mussey, during a residence at the Pyrenees, (says the *Boston Med. Jour.*) was struck with the fact that in those patients who made use of diachylon plaster, a black stain was caused by contact with the sulphurous water of the baths, in all places to which the diachylon had been applied. It was found that if the skin had been in contact with this preparation for a few minutes only, a sufficient quantity of lead would adhere to form a thick layer of sulphuret of lead, after being plunged in the water

which was with difficulty removed. Simply handling the plaster was enough to produce the same reaction with the mineral water on the fingers. This fact suggests that lead poisoning may occur by the external application of lead in this form. At the request of M. de Mussey, M. Boileau, Jr., of Luchon, in the Pyrenees, made some "zinc plaster" by precipitating white soap in solution with sulphate of zinc, and afterwards adding to the dried precipitate, resin, etc., as in diachylon. Its efficacy as a substitute for lead plaster has been tested affirmatively.

*Diabetic Sugar secreted most abundantly after Meals.*—M. Baudrimont, (*Journ. de Chimie Med. Ferrier*, 1856) in making a series of experiments on the urine of a diabetic patient, found that a litre (two and one-ninth pints, of urine voided two or three hours after dinner, yielded as much as three per cent. (463 grains) of glucose, whilst that tested on the following morning yielded but a trace. He therefore suggests that experiments made with a view to the presence of diabetic sugar should apply to the former period, and not, as is too frequently the case, to that obtained in the morning.

*Action of Sugar on the Teeth.*—M. Larez, (*Journ. de Chimie Med. Feb.* 1856) in a course of investigation, arrived at the following conclusions, viz.—

1. Refined sugar, from either cane or beets, is injurious to healthy teeth, either by immediate contact with these organs or by the gaz developed, owing to its stoppage in the stomach.

2. If a tooth is macerated in a saturated solution of sugar, it is so much altered in its chemical composition that it becomes gelatinous, and its enamel opaque, spongy, and easily broken.

3. This modification is due, not to free acid, but to a tendency of sugar to combine with the calcareous basis of the tooth.

*Preservation of Vaccine Virus in a liquid state.*—Dr. Maurin (*Journ. de Chimie Med. Mars*, 1856) says that glasses charged with the recent virus can be transported to great distances, and the virus preserved fit for use without moistening, by enveloping the glasses containing it in some fresh beet leaves, being careful to renew these leaves when they commence to fade or decay, say every 8 or 10 days. Dr. Maurin has used vaccine matter thus preserved for more than a month, with the best results.

*Eau Sédatif de Raspail.*—This lotion is occasionally pres-

cribed in this city; the following formulæ are translated from Dorvault's officine, page 239. Three strengths are indicated.

|                                   | No. 1.   | No. 2.   | No. 3     |
|-----------------------------------|----------|----------|-----------|
| Take of Solution of ammonia (22°) | 60 parts | 80 parts | 100 parts |
| Tincture of camphor,              | 10 “     | 10 “     | 10 “      |
| Common salt,                      | 60 “     | 60 “     | 60 “      |
| Water                             | 1000 “   | 1000 “   | 1000 “    |

Dissolve the common salt in the water, then mix the camphor and ammonia together, and add them to the saline solution. M. Raspail intends No. 1 for persons whose skin is easily affected by rubefacients; No. 2 for the allaying the pain from the sting of insects, and No. 3 for those patients who have a hard, callous skin. It is employed in hemicrania, cerebral congestion, and rheumatic affections. It is applied by compresses to the part affected, and when near the eyes care should be extended to protect them.

#### ON THE CONSTRUCTION AND MANAGEMENT OF AQUARIA FOR THE PRESERVATION OF LEECHES.

By MR. ALFRED ALLCHIN.

Having received a great many applications for particulars respecting the Leech conservatory, which I exhibited at the last *Conversazione* held at this Institution, I am induced to offer the following suggestions to those who are desirous of adopting that method of keeping leeches:—

A vessel, eighteen inches long, twelve inches wide, and ten inches deep, will be found to be of a size suitable for the preservation of any number of leeches not exceeding two hundred. This vessel may be made of slate and glass, or the slate may be replaced by wood lined with zinc, and the latter has the advantage of being cheaper and more portable than slate. I have found the following arrangement to answer the purpose well. The frame-work, together with the bottom and two ends, are made of birch-wood, and the top and two sides of glass. The inner surface of the wood, which otherwise would be exposed to the water, is covered with thin zinc, the metal being turned at the edges into the grooves prepared for the reception of the glass-plates, and fixed there with the cement by which the whole is united. The cement commonly used being composed of a mix-



ture of white and red lead, the part of it which is exposed to the water should be covered with shellac dissolved in spirit, and made into a paste with chalk. The water is thus prevented from coming into contact with any part of the wood-work, or becoming contaminated by the lead cement. The cover of the tank should consist of a wooden frame with a plate of glass fixed in the top, and having a rim with a piece of perforated zinc of about one inch in depth let in, for supplying air. This cover should fit on to the top of the tank like a shouldered box, so as to prevent the escape of the leeches, and at the same time to exclude dust.

Having thus prepared the tank, some coarse river sand, well purified by washing it with water, is to be mixed with small pebbles, and this mixture is to be introduced so as to cover the bottom of the tank to the depth of about an inch. A water plant is now to be selected. I have used the *Valisneria spiralis*, but this, not being a native of this country, it is sometimes difficult to obtain, in which case some other water-weed may be substituted for it, such, for instance, as the *Anacharis*, which chokes up many of our ponds and rivers. The roots of the plant are to be inserted in the sand, and the tank is then to be filled with clean river water. The next requisite is the water snail, two or three of which should be introduced to consume the decaying vegetable matter and the conferva that grows on the sides of the vessel. I prefer the *Planorbis corneus* for this purpose, having observed that this animal devours the slimy matter given off by the leeches, and does not, as the *Limnæa stagnalis* does, eat the *Valisneria* in preference to substances which it is most desirable to get rid of.

These preparations being made, before introducing the leeches I consider it better to let a week or two elapse, during which time the plant will have thrown off some oxygen with which the water will be charged; and with a view to the complete fulfilment of this object, it will be found advantageous to commence these aquaria in the spring of the year rather than the autumn. The best situation in which to place the tank is in a room, near to a window. If it were placed in too strong a light, such as it would receive in the open air, the water would be likely to become turbid from excessive growth of confervæ. Even under the conditions I have recommended, the glass sides of the tank will sometimes become more or less opaque, partly from the growth of

confervæ, and partly from the effect of leeches attaching themselves there. This unsightly appearance may be removed by cleaning the glass with a piece of rag or a nail-brush.

It is a common remark among Pharmacutists, that the sale of leeches involves much trouble and little profit; a remark which, before adopting the plan here described for keeping them, I was fully prepared to coincide with, as it was not unusual for me formerly, when my leeches were kept in the old way, to lose six or eight in a day or two from my little stock. But I am certain that if the aquarian system were generally adopted, the complaint referred to would cease to exist. I have now tried it for two years, and the result has been quite satisfactory. I now scarcely lose more leeches in a year than I did formerly in a couple of days. In fact, the aquarium supplies to the leech the conditions under which it lives in a natural state, the plant affording oxygen so essential to animal life, and in return receiving its required supply of carbonic acid.

Mr. Redwood inquired whether it was found necessary to maintain any definite proportion between the animal and vegetable life in the aquaria.

Mr. Allchin had not found any difficulty in that respect. One or two plants sufficed for a large number of leeches. The number of snails required depended upon the quantity of confervæ present, and this was influenced very much by the light to which the aquarium was exposed.

In answer to other questions, Mr. Allchin stated that he had not found it practicable to keep fish with the leeches; the latter attacked the fish, especially their eyes, to which they fastened themselves, and they soon destroyed their prey in this way. He had originally expected that the leeches would propagate in the aquarium, but in this he had been disappointed.

Mr. Redwood said that some years ago experiments were made by M. Soubeiran, Jun., of Paris, on the propagation of leeches, and he found, with a view to that object, that it was necessary to keep them in ponds having clay or mud banks, which the leeches could enter. He thought that some modification of the aquarium might be made, by which this condition would be fulfilled.—*Trans. London Pharm. Society, in Pharm. Jour. April, 1856.*

## ON THE PREPARATION OF REFINED LIQUORICE.

By DR. GEISLER.

The following investigations were made for the purpose of determining the best substance to be used as an addition to the purified or refined liquorice, giving it a dry and brittle character, and also to remedy the absorption of moisture from the atmosphere. He says, to gain this object I had formerly dissolved the crude liquorice in hot water and filtered or strained it through a woollen cloth of medium thickness, and then evaporated it to the proper consistence; as thus obtained, it did not possess a pure taste, and formed a cloudy solution with water. The liquorice used for the following investigations was in thinnish sticks without any stamp, and cost in Dresden about \$20 per hundred weight. This was placed between alternating rows of straw and extracted, on the displacement principle, with cold water. The solution thus obtained was strained and evaporated on a steam bath to the consistence of a pill mass; one-fourth of the crude extract gave 46 oz., 72 per cent. of dried extract, which was perfectly soluble in cold water.

1st. A portion of this purified extract was rolled out into sticks without any other addition. To obtain the sticks in a perfectly round state, it was necessary to re-roll them six times during the time they were being dried, the temperature being raised to 313 F. After remaining in an apparently dry room for a few days, they became so soft and flexible that they could not be broken; under a bell-glass with water, one oz. of this extract absorbed in three days 62 grains moisture.

2d. Sixteen parts of the purified extract reduced to the consistence of a pill mass, were thoroughly mixed with one part of starch and then rolled into sticks. During the time they were being dried at a temperature of 90° F. they lost their rotundity, and required re-rolling several times. They lost their brittleness, like No. 1, in a dry room. One ounce of this extract, under a bell-glass with water, had increased 54 grains after three days. It was not quite soluble in cold water, but hot water made a perfect solution.

3d. Sixteen parts of the purified extract were mixed with one part finely powdered sugar of milk. To roll out this mass, it was

found necessary to add a few drops of water. On being dried at  $90^{\circ}$  F., they only required re-rolling once; after being kept for a few days in a dry room, they did not become flexible, but still did not retain their ready brittleness. One ounce under a bell-glass with water, increased in three days about 40 grains in weight.

4th. The observation of some former authorities, that the meal of peas recommends itself as a good addition to prevent the softening of this extract, brought him upon the idea that, not starch, but some vegetable substance containing starch, would be better adapted to obtain this brittle character; he says, I believe that I have found in finely powdered liquorice root, not only the most natural, but also an improvement to the taste of the refined liquorice extract. Sixteen parts of the purified extract were mixed with one part of finely powdered liquorice root, and on being brought to the consistence of pill mass, rolled in sticks. Dried at a temperature of  $90^{\circ}$  F., they required but one rolling, remaining in a dry room perfectly brittle. The taste was pleasanter than Nos. 1, 2 and 3. This extract was naturally not perfectly soluble in cold water; an ounce of it increased 24 grains after an exposure of three days with water under a bell-glass. From the above investigations, it will be seen that a more constant state of brittleness is obtained by the addition of powdered liquorice root to the refined liquorice; also, that a vegetable powder containing starch, is better adapted as an addition than starch itself.

The discovery that the addition of sugar of milk lessens the inclination of refined liquorice to absorb moisture, is not without some merit, as the powdered refined liquorice has a better stability, without injury to the complete solubility in cold water.—  
*Archiv. der Pharm.* S. S. G.

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## ON THE COMPOSITION OF CREOSOTE.

By E. VON GORUP-BESANEZ.

In previous memoirs, the author had shown that creosote prepared according to Reichenbach's directions, from beech wood tar, is quite a different body from phenylic acid. The author could not hitherto determine the formula of creosote with perfect

certainty. The investigation of a series of chlorinated products allowed the formula  $C^{26} H^{16} O^4$  to be deduced for creosote with a certain amount of probability.

During the time in which the author had been occupied with this investigation, Völckel also published his investigation of creosote. According to Völckel, creosote prepared by Reichenbach's method is not pure, but contaminated by a small residue of volatile oils, which acquire color when exposed to the light. Völckel purified his creosote by solution in potash and distillation, and thus obtained a creosote, the analysis of which led to the formula  $C^{24} H^{14} O^5$ ; a basic lead compound had the composition  $C^{24} H^{13} O^4, PbO + 2PbO$ .

The creosote analyzed by Völckel dissolved in ordinary acetic acid and in dilute solution of potash, properties which Völckel regarded as a criterion of the purity of creosote. This creosote, therefore, differs from the author's in many points.

Völckel's creosote contained less carbon and hydrogen than the author's; it had a higher specific gravity (1.076 Völckel, 1.040 Von Gorup-Besanez,) and was perfectly soluble in dilute solution of potash and in ordinary acetic acid, whilst the author's was only partially soluble in these menstrua; when Völckel's creosote was heated with lime no color was produced, whilst the author's became blackish under this treatment. Both, however, were obtained from wood tar, the author's from beech tar, but the wood from which Völckel's was obtained is not stated; they had the same boiling point, and when boiled exhibited the same phenomena; on distillation with calcined lime, they furnished oils of nearly the same composition.

Völckel regarded the creosote treated by the author as not perfectly pure, because it was not treated with solution of potash. The author has therefore repeated his experiments. He treated one pound of creosote with solution of potash, according to Völckel's directions, and separated therefrom three to four ounces of a product boiling between  $395^{\circ}$  and  $410^{\circ}$  F., as pure creosote. This had the following properties:

It was a perfectly colorless, strongly refractive fluid, of an unpleasant odor, but decidedly purer than that presented by the commercial creosote, and somewhat similar to that of guaiacole. Spec. grav. at  $55^{\circ} + 4$  F. = 1.057. With persalts of iron, salts

of gold and platinum, with fir chips moistened with muriatic acid and with nitrate of silver, it behaved exactly like the creosote investigated by the author, but dissolved completely and readily in dilute solution of potash and in ordinary acetic acid. By long standing in the air it acquires a tinge of yellow, and when dissolved in concentrated solution of potash it becomes slightly brownish, but grows gradually darker and darker until it has attained a dark brown color. Its analysis gave—

|   | I.    | II.   | III.  |      |     |       |
|---|-------|-------|-------|------|-----|-------|
| C | 74.76 | 74.98 | 74.85 | 24 = | 144 | 75.39 |
| H | 7.78  | 7.84  | 7.78  | 15   | 15  | 7.85  |
| O | 17.17 | 17.48 | 17.37 | 4    | 32  | 16.76 |

As this creosote was purified exactly according to Völckel's directions, it is clear that the author's creosote could not be identical with Völckel's. Both crude products, however, were certainly obtained from wood tar by Reichenbach's method, whence it follows, that the products obtained in this way may vary. According to Völckel, in order to obtain a creosote free from certain volatile oils which contaminate the commercial product, and of the composition found by him, the boiling with solution of potash must be continued until the turbid distillate becomes perfectly clear on the addition of dilute solution of potash; and the solubility of creosote obtained by his method in ordinary acetic acid, and in very dilute solution of potash, is to be regarded as a sign of its purity. The author continued the boiling with solution of potash until the turbid distillate again became perfectly clear on the addition of dilute solution of potash; and creosote, purified by him in accordance with Völckel's method, was readily and completely soluble in very dilute solution of potash and in ordinary acetic acid, but nevertheless it possessed a different composition. Solubility in acetic acid and dilute solution of potash is not a property exclusively belonging to Völckel's creosote.

The result of the author's analyses of creosote, treated with potash according to Völckel's directions, come very near the average of the analyses of creosote not treated with potash.

The author then compares the formulæ to which the previous investigations of creosote have led. The formulæ are  $C^{26} H^{16} O^4$ ,  $C^{24} H^{15} O^4$ , and Völckel's  $C^{21} H^{14} O^5$ ; and he is of opinion that

none of them are to be regarded as rational formulæ for a determinate creosote, but only as empirical formulæ for different products. The author, at least, thinks that the facts furnish a proof that, by Völckel's process of purification, two different products are obtained from the crude wood tar creosote, one of which is of the composition  $C^{24} H^{15} O^4$  (Von Gorup-Besanez) and the other  $C^{24} H^{14} O^5$  (Völckel.) They are distinguished, as far as we know, only by the small difference in the specific gravity. The author also obtained a lead compound from his creosote. He mixed the solution with concentrated liquid ammonia, and diluted it with about 200 cub. centims. of water. On the addition of a solution of neutral acetate of lead, also diluted and mixed with a little ammonia, to this solution, a caseous white precipitate, separating in flakes like those of chloride of silver, was produced. This was washed on a covered filter, pressed between blotting paper, and dried first over sulphuric acid and afterwards at  $212^\circ$  F. It contained 64.80 per cent. of oxide of lead, which corresponds with the formula  $C^{24} H^{14} O^3, PbO + 2PbO$ . But the amount of lead is different according to the mode of treatment; in partial precipitations it was found that the first parts of the precipitate contained less oxide of lead. The lead precipitate loses creosote even at ordinary temperatures, and undergoes a change when dried at a temperature between  $176^\circ$  and  $212^\circ$  F.

Although it appears from this that the creosote investigated by the author was different from Völckels, the author tried, further, whether his creosote underwent an essential change by repeated treatment with potash. The creosote dissolved completely in potash, without the separation of any body. The boiling was continued for four days, each time five hours, without interruption. The solubility of the distillate in dilute solution of potash could no longer serve to indicate the stopping point, for it was soluble in very dilute solution of potash from the very commencement of the operation.

The distillate of the first day was turbid, exhibited some oil drops on the surface, and did not acquire any color by standing in the air. That of the second and third days gradually became violet-purple in the air. This beautiful violet-purple color was immediately produced when one or two drops of solution of potash

were added; a little ammonia (a trace) and perchloride of iron produced a dingy violet turbidity, and afterwards a discolored one. On the fourth day the distillate was again colorless, and no coloration was produced even by long standing and on the addition of potash; the operation was interrupted, and then the creosote was separated in the same way as the first time, distilled, and freed from water by rectification. The result this time was about an ounce of purified product, the general properties of which agreed with those of the first obtained. Its analysis gave—

|   |       |
|---|-------|
| C | 73.53 |
| H | 7.68  |
| O | 18.79 |

These numbers show a diminution of carbon of nearly 1.5 per cent., with a very inconsiderable decrease in the quantity of hydrogen, but still no agreement with Völckel's numbers. The small quantity of material remaining was therefore submitted to another treatment with potash. The phenomena were exactly the same as above. This time also, after about five or six hours' boiling, the peculiar violet-purple coloration of the distillate made its appearance, and its behaviour towards potash and perchloride of iron was the same. After eighteen hours' boiling the operation was interrupted, and the creosote separated and purified exactly in the same way as before. The whole quantity still remaining after rectification amounted only to a few grammes. Analysis gave—

|   | I.    | II.   |    |       |       |
|---|-------|-------|----|-------|-------|
| C | 73.43 | 73.72 | 48 | = 288 | 74.03 |
| H | 7.72  | 7.71  | 29 | 28    | 7.45  |
| O | 18.75 | 18.57 | 9  | 72    | 18.52 |

Thus, even by a third treatment of creosote with potash, no essential conversion takes place, although the distillates indicate several products of decomposition. By seventy-three hours' boiling, the body  $C^{24} H^{14} O^5$  was not obtained.

It appears, from a comparison of the different analyses of Reichenbach's creosote, that this has no constant composition; in the existing analyses the carbon varies from 75.82 to 71.92, and the hydrogen from 8.16 to 7.10. As these investigations have shown that the creosote becomes poorer in carbon by treatment with potash, it is very probable that the treatment with



solution of potash, which is employed in Reichenbach's method, furnishes a different product according as it is continued a longer or shorter time. But whilst Völekel is of opinion that the treatment with solution of potash changes, destroys and separates certain oleaginous bodies which accompany the creosote, raising its amount of carbon and hydrogen and diminishing its specific gravity, the author thinks that it produces a change of the creosote itself, characterized by the elimination of hydrogen and absorption of oxygen.

At the conclusion of his memoir, the author suggests that creosote of the formula  $C^{24} H^{14} O^5$  may, perhaps, be still more highly oxydized by continued treatment with potash. By this means, perhaps, guaiacole might be obtained, a body which stands in close relation to creosote. Völekel has adopted for it the formula  $C^{15} H^8 O^4$ , but the author thinks that, from Völekel's analyses, the formula might just as well be calculated at  $C^{48} H^{25} O^{13}$ . We should then have—

$C^{24} H^{15} O^4$ , the author's creosote after one treatment with solution of potash.

$C^{24} H^{14\frac{1}{2}} O^{4\frac{1}{2}}$ , the same after the second treatment.

$C^{24} H^{14} O^5$ , Völekel's creosote.

$C^{24} H^{13\frac{1}{2}} O^{5\frac{1}{2}}$  } wanting.

$C^{24} H^{13} O^6$  }

$C^{24} H^{12\frac{1}{2}} O^{6\frac{1}{2}}$ , guaiacole.

$C^{26} H^{18} O^2$ , carvacrole (Schweitzer.)

*London Chem. Gaz.*, Feb. 1, 1856, from *Liebig's Annalen*.

## ON CANTHARIDIN.

By DR. WITTSTEIN.

*Preparation.*—Coarsely powdered Spanish flies are digested in a sand bath for a day with four parts of water, strained through linen, pressed, and twice again digested with two parts of water; the strained liquid is allowed to settle for one day, the supernatant oil separated, and after adding wood charcoal one-tenth the weight of the insects, evaporated to dryness in a water bath. The dry mass is powdered and treated with sulphuric ether so long as the solution yields on evaporation a laminated

residue. This is effected most conveniently in a glass percolator of conical shape, the smaller end of which is closed with a piece of thick linen. The percolator is fitted with a cork into the neck of a bottle, the extract placed in it and treated with ether, which will yield a yellowish tincture. The wider upper end of the glass tube is loosely closed with a cork. The scales, after evaporation of the ether, are treated with cold alcohol of 80 per cent. for one day, frequently shaking; the alcohol is then poured off, the laminae spread on blotting paper and dried in the air. One pound of Spanish flies yields from 20 to 30 grains of cantharidin.

Cantharadin may also be prepared by direct treatment of the Spanish flies with ether or alcohol, but I cannot recommend the method, as by it a quantity of fatty oil is extracted, the subsequent separation of which is difficult, and occasions a loss of cantharidin.

*Recapitulation.*—Cantharidin exists in the insect in an uncombined state; and owing to the extractive matter present, is taken up by water, in which menstruum, when pure, it is insoluble. To dry the watery extract readily, and obtain it in a fit state for exhaustion with alcohol, the charcoal is used. The ethereal extract will yield with alcohol a yellow (resinous) matter.

*Properties.*—Pure cantharidin forms white, glittering, odorless and tasteless scales. In water it is insoluble, and nearly so in cold alcohol, but readily in boiling alcohol; ether and fatty oils readily dissolve it in the cold. Heated, it melts and volatilizes in white vapors, which possess in a marked degree the stupifying odor of Spanish flies, and condense on cold substances.

*Prac. Pharm. Chem.*

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## NEW METHOD OF PREPARING CAFFEIN.

By M. Puccetti.

The modes of preparing caffein hitherto employed may be reduced, with slight modifications, to the action of acetate and oxide of lead upon the decoction of finely-powdered unroasted coffee. This fluid thus obtained, from which the caffein is allowed to crystallize, always contains a very large quantity of extractive matter, which, as it is very soluble in alcohol and

water, prevents the alkaloid from crystallizing, and thus renders it impossible to extract the whole of the caffeine from the coffee. The author, therefore, tried the following method. He brought the decoction of coffee to the consistence of an extract, and treated it with alcohol, which left undissolved a resinous substance of the appearance of bird-lime; he then dissolved a slight excess of pulverized caustic lime in the alcoholic fluid, which, when filtered and evaporated to the necessary degree, furnished crystallized, but still impure caffeine. This was pressed between thick linen, to get rid of the adherent mother liquor, and then dissolved in well water and treated with animal charcoal, by which means the alkaloid was obtained in a very pure state. This mode of preparation gave one-twentieth of an ounce of caffeine to every pound of coffee, or twice as much as by the ordinary process. As coffee is pulverized with difficulty, and does not contain very much of the bitter principle, the author substituted tea for coffee; tea being richer in caffeine, furnishes this alkaloid with more facility and in greater quantity.

Although, by this treatment, tea furnishes a larger quantity of the product, it is certain that the action of the alcohol upon the extract of tea is attended with difficulty, on account of the very large quantity of insoluble matter which it leaves; this not only renders the process inconvenient, but may also lead to a diminution of the result, as indeed the author found to be the case. He therefore changed the mode of preparation in the following manner.

He exhausted the tea by decoction, mixed the fluids obtained, and concentrated them at first with a strong heat. When the fluid was somewhat thickened, he put it into a porcelain dish, and evaporated it by a gentle heat to the consistence of a thick extract. To this extract, whilst still warm, he added two oz. of finely-powdered commercial pearlash for every pound of tea; this was stirred in with a wooden spatula. The alkaline carbonate produced a strong effervescence; the mass swelled up, but returned to its original volume at the completion of the reaction. The dish was then removed from the fire, and its contents treated with alcohol; this may be effected in two ways. The alcohol may be added to the substance just taken from the fire, and stirred with a pestle of glass or earthenware, which may be

easily done, as the mass is always soft. Or the extract, treated with carbonate of potash, may be taken out of the dish and formed into thin cakes, which are brought to complete dryness on a furnace. In this way a blackish mass of resinous appearance is obtained; it possesses the odor of tea, and is easily powdered. The powder is passed through a hair-sieve and put into a flask with a ground stopper; alcohol is then poured into it, the flask is closed, kept in a warm place, and shaken from time to time, the alcohol being changed until it no longer exerts any action upon the extract. The alcoholic extracts are mixed together and distilled, and the fluid remaining in the retort is taken out and evaporated in a porcelain dish until it furnishes crystals on cooling. These are pressed between thick linen, dissolved again in well-water, and thus furnish a sufficiently pure thein, which may be obtained very white by treatment with animal charcoal.

The author has employed this process with both green and black tea. The green tea furnished only about half as much caffein as the black, which confirms the observations of Liebig and others. By the most careful treatment of different kinds of black tea, he obtained very variable quantities of the product, depending, of course, upon the differences in the quality of the tea. The following are his numerical results:

| Tea employed.                     | Thein obtained. | Per cent. |
|-----------------------------------|-----------------|-----------|
| 4608 grms. green tea              | 38 grms.        | 0·82      |
| 3456 grms. common black tea       | 40 grms.        | 1·16      |
| 3312 grms. the same, another kind | 30 grms.        | 0·90      |
| 1584 grms. congou tea             | 40 grms.        | 2·55      |

*London Chem. Gaz.*, Feb. 1, 1856, from *Archiv. der Pharm.*

## ON FUSED CYANIDE OF POTASSIUM.

BY DR. WITTSTEIN.

*Preparation.*—Eight parts of yellow prussiate of potash are finely powdered, thoroughly dried with a gentle heat, intimately mixed with three parts of pure carbonate of potash, the mixture, thrown by spoonfuls into a red hot Hessian or iron crucible, allowed to remain in the fire until thoroughly fluid, and a glass rod or iron spatula dipped into it and withdrawn, becomes

covered with a clear liquid, which, on cooling, solidifies to a white (not at all yellow) mass. When this point is attained, the crucible is removed from the fire, over which it is held for a few minutes to allow the black particles swimming in it to subside the more readily; the clear liquid poured on a clean iron dish, broken into small pieces so soon as it has solidified, and kept in well closed vessels. The yield will be from 6 to  $6\frac{3}{4}$  parts.

*Recapitulation.*—Ferrocyanide of potassium, deprived of its water of crystallization, consists of  $2\text{KC}y + \text{FeC}y$ . By fusing this with an equivalent of carbonate of potash, the oxygen of half the potash combines with half the cyanogen of the cyanide of iron to cyanic acid, which, with the other half of the potash, forms cyanate of potash,  $= \text{KO} + \text{CyO}$ ; the potassium liberated, with the other half of the cyanogen of the cyanide of iron, forms cyanide of potassium; the iron separates, in a metallic state, as grayish-black flakes, and the carbonic acid is evolved:

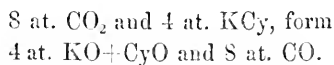
2 at.  $2\text{KC}y + \text{FeC}y$ , and 2 at.  $\text{KO} + \text{CO}_2$ , form

5 at.  $\text{KC}y$ , 1 at.  $\text{KO} + \text{CyO}$ , 2 at. Fe, and 2 at.  $\text{CO}_2$ .

4610 parts of anhydrous, or 5285 parts of crystallized (containing three at. of water) ferrocyanide of potassium require 1730 parts of carbonate of potash, which nearly agree with the proportions given—eight and three parts. The above explanation of the process is not perfectly correct; for, instead of five at. of cyanide of potassium and one at. of cyanate of potash, I find that the salt has pretty constantly the formula,  $7\text{KC}y + 3(\text{KO} + \text{CyO})$ .\* The reason of it is most likely this, that the greater part of carbonic acid liberated becomes deprived of half its oxygen by a portion of the cyanide of potassium, and is consequently evolved as carbonic oxide. One and three-fifths parts of every two at. of carbonic acid are thus reduced; (to avoid fractions, we will suppose at first 25 at.  $\text{KC}y$  and five at.  $\text{KO} + \text{CyO}$  are formed, and 10 at. of carbonic acid, of which eight at. give up half their oxygen  $=$  eight at. to four at. cyanide of po-

\* The portions of salt prepared at three different times gave, on precipitation with nitrate of silver, from 20 grains 26.4, 26.5, and 26.75 grains cyanide of silver, the mean  $=$  26.55 grains. These 26.5 grains cyanide of silver correspond to 12.93 grains cyanide of potassium, consequently from 20 grains of the salt there remain 7.07 grains for cyanate of potash. The compound  $7\text{KC}y + 3(\text{KO} + \text{CyO})$  consists in 20 parts of 13.04  $\text{KC}y$  and 6.96  $\text{KO} + \text{CyO}$ .

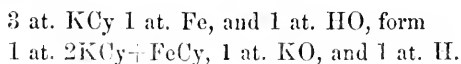
tassium to form four at. cyanate of potash and eight at. carbonic oxide:



Of the 25 at. KCy there remain 21 at.; and to the five at. KO + CyO four more are added, making 21 at., KCy and nine at. KO + CyO, which stand in the relation to each other of seven to three. The oxygen of the air may also exert a partial oxidizing agency on the cyanide. Besides the products already mentioned, when the carbonate of potash or ferrocyanide of potassium is not thoroughly dry, ammonia is also formed and being evolved on fusing, is detected by its odor.

The mixture must be added to the crucible by small quantities at the time, to allow of its being covered by the fused portion, as all which adheres to the sides of the crucible above this does not form a pure product. It is necessary to take care that no particles of iron remain floating in the mass previous to pouring it out.

Eight parts of prussiate of potash and three parts of carbonate of potash should produce more than seven parts, but the yield is never so high as this, in consequence of a portion adhering to the crucible. To avoid wasting this, the crucible is well washed with cold water, filtered as quickly as possible, and the solution used to form other metallic cyanides, as cyanide of zinc, by adding to it a solution of sulphate of zinc, &c. It is seldom, however, that a solution of cyanide of potassium obtained in this manner is free from iron; as the particles of this metal in the crucible abstract, during the digestion with water, a portion of the cyanogen from the cyanide of potassium, and form with another portion of the latter ferrocyanide of potassium; the liberated potassium, by decomposing water and eliminating hydrogen, forming potash:



*Properties.*—The preparation just described forms solid white lumps of a crystalline fracture, odorless, but possessing a strong alkaline taste like bitter almonds. In the air it deliquesces, evolving prussic acid and carbonate of ammonia, whilst carbonate

of potash forms the residue. The prussic acid which separates is from the cyanide of potassium, and the carbonate of ammonia from the decomposition of the cyanate of potash :

1 at.  $\text{KO} + \text{C}_2\text{NO}$  and 3 at.  $\text{HO}$ , form

1 at.  $\text{KO} + \text{CO}_2$  and 1 at.  $\text{NH}_3 + \text{CO}_2$ .

In closed vessels the aqueous solution behaves like that of the pure cyanide, *i. e.*, it acquires a brown color and deposits a carbonaceous matter. Heated with dilute sulphuric acid it evolves hydrocyanic and carbonic acids, (consequently, when passed into lime water these gases cause a turbidness,) and the residue will consist of sulphate of potash and sulphate of ammonia :

1 at.  $7\text{KCy} + 3 (\text{KO} + \text{C}_2\text{NO})$  13 at.  $\text{SO}_3$  and 19 at.  $\text{HO}$ , form

10 at.  $\text{KO} + \text{SO}_3$ , 3 at.  $\text{NH}_4\text{O} + \text{SO}_3$ , 7 at.  $\text{HCy}$ , and 6 at.  $\text{CO}_2$ .

Black specks in the mass will be *metallic iron*, from want of care in pouring it from the crucible, in which case its solution will generally have a slight yellow tinge (contains ferrocyanide of potassium) and gives a similar reaction, with sulphate of copper, as the previous preparation (when this is contaminated with iron.)

*Prac. Pharm. Chemistry.*

## PREPARATION OF ALUMINIUM FROM CRYOLITE.

By HEINRICH ROSE.

Since the publication of Déville's method of extracting aluminium, I have endeavored to obtain the metal, by means of sodium, from the double chloride of aluminium and sodium; not, however, following exactly the directions of Déville, but heating these substances placed in alternate layers. The result was unsatisfactory. Rammelsberg, likewise, operating exactly in accordance with Déville's directions, obtained but a very inconsiderable product, and at the same time was seldom able to prevent the bursting of the glass tubes, in which the sodium vapor reacted upon the chloride of aluminium.

The use of chloride of aluminium and its compounds with the alkaline chlorides is particularly inconvenient, owing to their volatility and deliquescent character, which necessitate the exclusion of air during the reaction with sodium.

It therefore occurred to me to employ instead of chloride of aluminium, the fluoride of aluminium, or rather its compounds.

with the alkaline fluorides, one of which, the fluoride of aluminium and sodium, occurs native in a state of great purity as cryolite. This substance is not volatile; it may be reduced to fine powder with great ease, is anhydrous, and does not absorb moisture from the air.

By heating powdered cryolite mixed with potassium to bright redness in a small iron crucible, I succeeded in obtaining aluminium with greater ease than from chloride of aluminium or its compound with chloride of sodium. I was, however, prevented by the scarcity of the mineral from continuing the experiments, until a short time since, when I received from M. Krantz, of Bonn, a considerable quantity of it, and likewise ascertained that it was to be had in large quantities at a very small cost.

A sample of a white powder was given to me, large quantities of which were introduced into commerce from Greenland, under the name of "mineral soda," at a price of nine shillings a hundred-weight. It was used in the soap factories, where, by means of caustic lime, soda lye was extracted, which was peculiarly adapted for the production of certain kinds of soap, probably on account of its containing alumina. This powder proved to be cryolite.

Hitherto I have, in preparing aluminium, employed small iron crucibles  $1\frac{1}{4}$  inch high and  $1\frac{1}{8}$  inch diameter. The finely powdered cryolite was placed in layers with sodium, pressed down tightly, and covered with a thick layer of chloride of sodium.

I found chloride of potassium the most advantageous flux. It has a low density, and facilitates the fusion of the fluoride of sodium which is formed in the reaction.

The proportions were equal parts of chloride of potassium and cryolite, with two parts of sodium for five of cryolite.

The crucible was covered with a well-fitting porcelain lid, and exposed to strong red heat for half an hour. The contents were then perfectly fused. When cold, the melted mass was immersed in water; and generally there was no evolution of gas, or, at most, it was very slight; and in those instances the hydrogen had the same unpleasant odor as that evolved during the solution of cast-iron in hydrochloric acid, the carbon originating from the minute quantity of naphtha adhering to the sodium used.



The melted mass softens very slowly, owing to the slight solubility of fluoride of sodium. This is somewhat lessened by the chloride of potassium. After about twelve hours the mass was crushed in a porcelain mortar, and the globules of aluminium separated. Their weight was from 0.3 to 0.4 or 0.5 grm.

The smaller globules could not easily be separated by levigation from the undecomposed cryolite and the alumina, which was always formed, on account of the greater hardness of the substances. This portion of the mass was treated with cold dilute nitric acid, which, though it did not dissolve the alumina, left the globules of the aluminium with a brilliant surface. After drying, the globules were separated from the alumina and cryolite powder by rubbing upon muslin.

Owing to the formation of an almost imperceptible film of oxide, which is formed upon them when heated, the small globules of aluminium require to be melted with a flux, in order to obtain a mass. There is always some loss in melting aluminium with chloride of potassium. A globule of the metal, weighing 3.85 grm., lost in this way 0.05 grm. The chloride of potassium did not contain any aluminium when dissolved in water, but a small quantity remained undissolved. There is no doubt that a portion of the aluminium decomposed chloride of potassium, and that potassium and chloride of aluminium were volatilized, as is the case when copper and even silver are melted with chloride of potassium.

When the globules of aluminium were melted under the double chloride of aluminium and sodium, as recommended by Déville, the loss, if there is any, is very slight.

When the metal is melted under chloride of potassium, the surface is not perfectly even, but presents small indentations, which is not the case when it is melted under the double chloride of aluminium and sodium.

The best method of preparing double chloride of aluminium and sodium is to place a mixture of alumina and carbon in a glass tube of considerable diameter, within which is a narrower tube containing chloride of sodium, and, while passing a stream of chlorine through the largest tube, to apply a very strong heat to that part containing the alumina and carbon, and a less heat to the part containing chloride of sodium. The vapor of chloride

of aluminium thus formed is absorbed so readily by the chloride of sodium, that scarcely any is deposited at other parts of the apparatus.

Several modifications of the preparation of aluminium were tried, but the one described was found most advantageous.

When the sodium was placed at the bottom of the crucible, above it the cryolite powder, and then the chloride of potassium, much of the sodium escaped in vapor, which was not the case when the sodium was cut in thin slices and placed in layers with the cryolite.

After the crucible begins to be red-hot, it suddenly becomes intensely so when decomposition takes place. The heat must not be lessened then, but maintained for half an hour only. If continued for a longer time, the reaction of chloride of potassium upon the aluminium would cause loss. Neither were the globules of aluminium larger when the heat was maintained for two hours. That is the case only when a very intense heat is employed.

When the heat is discontinued after five or ten minutes the yield of aluminium is remarkably small, because the metal is then pulverulent, and burns while the crucible cools.

No larger product was obtained when the cryolite powder was mixed with an equal quantity of chloride of potassium, or when the layers of sodium and cryolite were covered with double chloride of aluminium and sodium.

The use of chloride of sodium as a flux necessitates a higher temperature, but the result is not sensibly different.

The yield of aluminium, obtained when the operation was conducted in the manner described, was very variable. It never amounted to the whole of the metal in the cryolite used. This substance contains only 13 per cent. of aluminium. The largest quantity obtained from 10 grms. of cryolite was 0.8 gm., frequently only 0.3 gm.; and less was obtained, instead of the 1.3, which, by calculation, it ought to yield, if the reduction was complete.

The most important condition to which these variations must be ascribed is the temperature. The higher it is, the more does the aluminium aggregate into globules. I once succeeded in obtaining almost the whole of the reduced aluminium in one button, weighing 0.5 gm.

There is also great loss of aluminium caused by the slow cooling of the melted mass and the burning of the pulverulent metal. In order to obviate this, another mode of preparation was adopted. The cryolite (20 grm.) was ignited strongly in a gun-barrel, through which was passed a stream of hydrogen, and then the vapor of 8 grm. of sodium. The contents of the tube were cooled in an atmosphere of hydrogen, and when digested with water, to dissolve the fluoride of sodium, left a quantity of a black powder consisting chiefly of iron.

The small product obtained in these experiments should not deter others from further attempts to prepare aluminium from cryolite. This substance can now be obtained at such a low price, and sodium is likely to be obtained so cheap, as to render desirable the search for a method that will ensure an adequate product. Moreover, I am of opinion that cryolite is better adapted for the preparation of aluminium than any compound of this metal.

Aluminium has not yet been obtained with certainty direct from alumina. Potassium and sodium appear to effect the reduction of metallic oxides only when the potash or soda produced can combine with the unreduced oxides. Pure potash or soda, the characters of which are as good as unknown, do not appear to be formed. Now, as alumina combines readily with the alkalies forming aluminates, there is reason to believe that the reduction might be effected by the alkaline metals.

Even if this should prove to be the case, cryolite would in all probability be for a long time the more available source of aluminium, unless it increased very much in price. This mineral occurs in a state of singular purity, and contains, besides aluminium, only fluorine and sodium, substances which do not interfere with the preparation of the metal. Alumina, on the contrary, is rarely found pure, and its separation on a large scale, from substances that would be prejudicial to the production of the metal, would be attended with great difficulties.

The globules of aluminium that I have obtained are for the most part so malleable, that they may be flattened out and rolled into foil without rending at the edges. They have a strong metallic lustre. Some pieces, on the contrary, which were found at the bottom of the crucible, sometimes firmly attached to it and not globular, rent at the sides when flattened. They also differ somewhat in color and lustre. They are evidently not so

pure as the majority of the globules, and probably contain some iron.

A large globule of aluminium, weighing 3.8 grm., appeared when cut through to be distinctly brittle, for about half a line from the exterior, while the inner part was soft and malleable. Sometimes there were cavities inside the globules.

Déville has obtained aluminium in a crystalline state, and I have likewise observed this in some instances. One large globule had quite a radiated crystalline structure at the part which was lowest during the cooling. Déville is of opinion that he has obtained octohedrons; but, according to the examination of my brother, the crystalline structure does not appear to be that of the regular system.

In an attempt to melt, without any flux, a somewhat impure globule of aluminium which had been flattened, small globules were protruded from the surface. The impure metal being least fusible, the pure metal mixed with it melts, expands, and is forced out of the mass, as is the case with impure bismuth.

I have already remarked that cryolite is used in Berlin, under the name of "mineral soda," for the preparation of caustic soda lye. Powdered cryolite is perfectly decomposed when heated with caustic lime and water at the boiling point. The fluoride of calcium produced does not retain any aluminium, the whole of which is dissolved as alumina by the soda, which, on the other hand, is free from fluorine, or contains only very minute traces of it.—*Lond. Pharm. Jour.*, Feb. 1856, from *Annalen der Physik und Chemie*.

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#### PIPITZAHUIC ACID.

*Pipitzahuic Acid* is the name given to a substance recently extracted by M. Rio de la Loza, Professor of Chemistry, of Mexico, from a root known in some parts of the Mexican republic as *Raiz del Pipitzahoac*.\* This root, specimens of which, together

\*The learned body in Mexico to whom the first account of this substance was submitted changed the name of the acid, in honor of its discoverer, from *Pipitzahuic* to *Rioloziac*. As the former name is more in accordance with established custom, and as we find the acid described in Germany under that designation, we prefer it (barbarous though it is) to that proposed by the Mexican savans.

with the acid, were in the Paris Exhibition, is the produce of a compositous plant, probably, we are informed, of the genus *Trixis*. It is used in its native country as a drastic purgative, in the somewhat large dose of two or three drachms. The acid is likewise purgative in a dose of from six to twelve grains.

The methods employed by M. de la Loza for the separation of the acid are sufficiently simple. The first is *by sublimation*: a quantity of the root in powder is mixed with an equal volume of sand and cautiously heated to a temperature not exceeding 176°F. The acid sublimes, and may be collected in the upper part of the vessel. A second method consists in pouring an alcoholic tincture of the root into water, when pipitzahoic acid (impure, we presume) is precipitated. A third process is that of allowing the alcoholic tincture to evaporate spontaneously, when the acid will crystallize out.\*

Pipitzahoic acid has been investigated in the laboratory of Professor Liebig by Mr. Mason C. Weld.† This chemist describes the pure acid as readily soluble in absolute alcohol and in ether, from which it is precipitated upon the addition of water, in voluminous yellow masses. Upon evaporation of the alcoholic solution, the acid is found crystallized in tufts of lamellar crystals. Crystallized from ether, it forms small, shining, obliquely-rhombic tables. The acid has a golden-yellow color, and is unchanged by exposure to the air. At about 212° F. it fuses, forming a red liquid, which, upon cooling, solidifies in a crystalline form: at a little over 212°, it sublimes unchanged, condensing in the form of golden-yellow scales.

Pipitzahoic acid, according to Mr. Weld, has a composition of  $C_{30} H_{20} O_6$ . Caustic and carbonated alkalies and the alkaline earths give, with solutions of the acid, an intense purple color. The salts of the alkalies possess this characteristic color; they are easily soluble in water, alcohol, or ether. Combinations of the oxides of copper, silver and lead, with pipitzahoic acid have also been obtained.

The acid, it is thought, may be useful as a dye, and also as a chemical test for alkalies.—*Lond. Pharm. Jour. Feb. 1856.*

\* *Catalogue des Produits Naturels, Industriels, &c., exposés dans la Section Mexicaine à l'Exposition Universelle de 1855.* Paris: 1855. Page 51.

† *Annalen der Chemie und Pharmacie*, August, 1855, p. 188.

## POISONING BY STRYCHNIA—TREATED WITH OLIVE OIL.

By S. A. GUS. SHAW, M. D.

March 7, 1852, I was called to see a negro woman belonging to R. M. Hannay, of Rock Island, Texas; found her, on my arrival, about six o'clock in the evening, in convulsions, with slight rigidity; she was very sensible to external impressions, the contact of the cup to the lips being sufficient to produce a paroxysm requiring four negro men to confine her to the bed, lasting two or three minutes; the paroxysms occurred every five minutes when she was left perfectly quiet. The least movement or touch was sufficient to renew them immediately. The pulse unchanged; inspiration deep; anxiety; heat of the stomach, and a choking sensation in the throat. I had administered strychnia a few days before in a case of paralysis of the arm, and was struck with the analogy of the contractions with the effect produced by that article. I administered a half bottle of sweet oil, which she vomited; repeated it immediately, which she retained five minutes, and vomited; repeated again, which she retained, perhaps, ten or fifteen minutes, and again vomited. On stepping out of the cabin, I found three dogs in the same condition, which was immediately accounted for, as they had lapped up the oil vomited by the girl. By this time the girl could speak without bringing on the paroxysm, and informed us that, about four o'clock, she had found a piece of dried beef in the cabin, which she tasted of, and finding it extremely bitter, gave it to her children. I immediately stepped to the crib where they lay, and found one of two years in the same condition in which the mother had been. I gave the oil which had operated so happily, and had the pleasure of finding them out of danger at about twelve o'clock, and returned home. The woman was in the field at work next morning at ten o'clock A. M. When I paid my visit during the evening, she had a slight paroxysm in the field, and was again treated with the oil, and completely relieved. No bad effect was produced. No change, except an increase of appetite, could be perceived. Both recovered. The three dogs died before I left, at twelve o'clock. A fourth dog was taken, and saved by the oil. The facts in the case were these: Mr. Hannay had set baits for wolves during the winter,

which troubled him, and this dried beef was one of them, and contained not less than ten or fifteen grains of sulphate of strychnia. It must have been in the stomach one hour before she was known to be sick. Mr. Hannay gave her a dose of oil (castor) at once, which no doubt protected the stomach and prevented the absorption of the poison in a dangerous quantity, until my arrival. The negro woman took, in all,  $3\frac{1}{2}$  bottles olive oil; the child nearly 1 bottle.—*Amer. Jour. of the Med. Sciences.*

Taussé Point, St. Martin's, La., June 6, 1854.

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### ON CRYSTALLIZED ACETATE OF MAGNESIA.

By KARL VON HAUER.

Acetate of magnesia is mentioned in all the text-books of chemistry as a salt which is crystallizable only with great difficulty; and when its aqueous solution is evaporated, generally remains in the form of a bitter, sticky, and deliquescent gum. In the dehydrated state, according to the analyses of Wenzel and Richter, its constitution is  $C^1 H^3 MgO^4$ . According to Connell, it is distinguished from formiate of magnesia by its incapability of crystallization and its deliquescence.

The author prepared this salt by dissolving caustic magnesia in acetic acid. If the aqueous solution thus obtained be evaporated, it will become concentrated until it attains the consistence of a syrup, and will at last become dry, without presenting any formation of crystals. This is the case even when the evaporation is effected by a moderate heat. But if the concentrated solution of the salt be left to evaporate spontaneously at the ordinary temperature of a room, it generally acquires a crystalline film on the surface, which gradually becomes very solid, and so close that it to a certain extent hermetically seals the solution, and consequently prevents its further evaporation. It is but rarely that crystallization commences at the bottom of the vessels, and the surface of the fluid remains alway free, but under these circumstances the largest crystals are obtained. This mode of preparation, however, depends almost entirely upon chance. The author therefore tried concentrating the solution of the salt very strongly by heat, and then letting it cool as slowly as possible. In this way he always succeeded in obtaining crystals

of considerable size, especially when a large volume of fluid was employed, this greatly facilitating the slow cooling. The formation of crystals takes places in this case with acid, as well as with more neutral solutions. The author did not succeed in adding to the size of ready-formed crystals, because when these were placed in freshly-concentrated solutions they became crusted with a new formation of small crystals, without increasing in their original form. Solutions containing an excess of acid furnished more distinctly-developed crystals, with bright shining surfaces; those formed in more neutral solutions are larger, but generally less transparent. The salt obtained is not so very deliquescent as is generally supposed. At the ordinary temperature of a room the crystals may be readily dried on blotting-paper, and they exhibit no alteration even when kept for months. In closed vessels they may be kept with still less danger of deliquescing. The composition of the salt was found to agree with the formula  $C^4 II^3 MgO^4 + 4HO$ . Its analysis gave 18.73 and 18.75 per cent. of magnesia, which was determined by the calcination of the salt.

For the purpose of this analysis, the salt was dried at the ordinary temperature of the room. An analysis of crystals which had already been kept for some months gave the same results. When dried over sulphuric acid, the salt effloresced. When heated on the water-bath, it lost its 4 atoms of water of crystallization almost entirely; but this required a considerable time. The loss of weight, whilst drying at  $212^{\circ}$  F., took place as follows:—

|       |     |         |       |    |       |       |     |   |       |     |       |       |
|-------|-----|---------|-------|----|-------|-------|-----|---|-------|-----|-------|-------|
| 1.115 | gm. | weighed | after | 4  | hours | 0.907 | gm. | = | 18.65 | per | cent. | loss. |
| ...   | ... | ...     | ...   | 9  | ...   | 0.837 | ... | = | 24.93 | ... | ...   | ...   |
| ...   | ... | ...     | ...   | 15 | ...   | 0.783 | ..  | = | 29.77 | ... | ...   | ...   |
| ...   | ... | ...     | ...   | 19 | ...   | 0.766 | ... | = | 31.30 | ... | ...   | ...   |
| ...   | ... | ...     | ...   | 24 | ...   | 0.750 | ... | = | 32.73 | ... | ...   | ..    |

It appears also that when this heat is so long continued, a certain, although very small quantity of acetic acid is expelled with the water, for when the salt dried in this manner was dissolved in water, it left a small residue. When more strongly heated, it behaved like the other acetates, first losing its water and swelling up strongly, evolving acetic acid and afterwards acetone, and finally smouldering away when heated to redness. Its crystals belong to the monoclinohedric system.—*Chem. Gaz. from Jahrb. der K. K. Geolog. Reichsanstalt.*



## NOTE ON THE PREPARATION OF URANIUM.

By E. PELIGOT.

In 1842 the author showed, that by treating protochloride of uranium with potassium, uranium was obtained partly in the form of a black powder, and partly in silvery metallic plates; but as the sudden elevation of temperature produced by the reaction prevented the employment of earthen crucibles, and rendered the use of platinum vessels necessary, the metallic scales were always alloyed with platinum.

Since sodium has been so easily procurable, the author has renewed his experiments, substituting sodium for potassium. He proceeds, in the following manner:

The quantity of sodium necessary to decompose the green protochloride of uranium (prepared by submitting one of the oxides of this metal to the simultaneous action of chlorine and charcoal) is put into a glazed porcelain crucible. The sodium is covered with very dry chloride of potassium, and then with a mixture of the latter salt and chloride of uranium. The crucible, closed with its lid, is placed in a luted earthen crucible, which is filled with charcoal-powder, and also closed with an earthen cover. The object of the addition of chloride of potassium is to render the reaction less instantaneous and violent.

The crucible is heated until the reaction takes place, which is known by the sound produced at that moment; it is then immediately removed into a blast-furnace, and kept at a white heat for a quarter of an hour or twenty minutes; on cooling it, a fused cinder is found in the porcelain crucible, and this encloses several globules of uranium.

Thus prepared, uranium possesses a certain degree of malleability; it is hard, but may easily be scratched with steel; and its color resembles that of nickel or iron. In the air it acquires a slight yellowish tint, in consequence of a slight oxidation of the surface. When heated to redness, it exhibits a brilliant incandescence, and becomes covered with a voluminous black oxide, in the interior of which a portion of the metal is found unchanged if the action of heat has been stopped in time. Its density is 18.4, so that next to platinum and gold it is the heaviest body with which we are acquainted. This specific gravity may per-

haps justify the high equivalent which the author has attributed to this metal.

The author has also ascertained that uranium may also be obtained from the same green chloride by means of aluminium. Its isolation by this reaction is no doubt due to the great volatility of the chloride of aluminium.—*Ibid*, from *Comptes Rendus*, Jan. 21, 1856.

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#### ON SWEET SPIRIT OF NITRE.

By D. R. BROWN, of Edinburgh.

It appears that sweet spirit of nitre was known so early as the 13th century. It is at least something in its favor, that after six hundred years it still maintains its ground, and is in very general use.

An immense number of formulæ have been given for its preparation; but, however prepared, it consists essentially of impure hyponitrous ether and rectified spirit, in variable proportions; and these proportions vary from twenty per cent. of the ether down to one or even less. These variations are not indeed permitted by the Colleges of London, Edinburgh, or Dublin, each having for itself a formula for the preparation, and also a standard strength; yet each College differs from all the others. The Edinburgh formula gives a preparation containing 20 per cent. of hyponitrous ether, while that of the Dublin is only 8.70 per cent. With respect to the London formula it is difficult to say what its per-centage may be. The most extravagant calculation will afford no more than 16.43 per cent., while the reality is undoubtedly much below this amount. We have examined samples of what was termed "the best," and been unable by fractional distillation to find more than a mere trace; among these were samples from London. It is upon the presence of the ether that the virtues of the sweet spirit of nitre depend. It is surely a sad condition of affairs when a prescription, written and prepared in London or Dublin, shall, when taken to Edinburgh, have the dose increased to two doses and a half; or, that when written in Edinburgh and prepared in London or Dublin, the dose should go down to less than one-half. But more sad still, that, the dose being either 20, 10, or 8.70 per cent. of the

ether ordered, it should in reality contain only one per cent. It is surely time that variations in medicinal preparations were done away with—over the earth if possible—but at all events, at home; and more especially such variations as have been pointed out. We have long felt the necessity of calling the attention of the Society to this preparation. The permission by the Government to employ methylated spirit in manufactures gives us the opportunity.

All the formulæ, however numerous, given for the preparation of Sp. Eth. Nit., arrange themselves under one or other of three modes, having for their result a mixture of hyponitrous ether and strong alcohol, and are but modifications of one and the same process—namely, the production of hyponitrous acid by the action of nitric acid upon an excess of alcohol.  $\text{NO}_5$  is made to act upon alcohol indirectly or directly. Either the  $\text{NO}_5$  is eliminated from a salt containing it while in contact with strong alcohol, or the acid first freed from combination is added to the alcohol. The third mode is, first, the preparation of hyponitrous ether, and then its solution in rectified spirit. The second of these modes is that followed by the London Pharmacopœia, and the third, that by the Edinburgh and Dublin.

The action of  $\text{NO}_5$  upon alcohol ought to receive an investigation such as, so far as we know, it has not hitherto met with; for although the number of products formed and separated are numerous, yet the precise conditions which give origin to these are not sufficiently defined; a few degrees more or less of heat, or an acid more or less strong, modify the results. But we confess the investigation to be most difficult. What we have to do with at present is the result of the action of  $\text{NO}_5$  upon rectified spirit, as it offers itself to us in the preparation of the Sp. Eth. Nit. of the Pharmacopœias. The products of that action divide themselves into three groups, one of which passes off in the state of gases; another abides in the flask or retort; and the third, that with which we have to deal, passes over into the receiver. According to the London formula, we will have in the receiver a finished product, requiring no more to be done to it, consisting of a solution of impure hyponitrous ether, containing aldehyde, in a very strong rectified spirit. By the Edinburgh and Dublin formulæ we have a product which has yet to undergo

purification, and afterwards to be mixed with its proper proportion of rectified spirit. But that purification does not give a chemically pure  $\text{AeO} + \text{NO}_3$ ; it also contains aldehyde. The product by the formulæ of all the Colleges is then alike in this—they all contain  $\text{AeO} + \text{NO}_3$ , alcohol, and aldehyde, or the hydrated oxide of acetylene ( $\text{C}_4 \text{H}_3 \text{O} + \text{HO}$ ).

Pure hyponitrous ether—or, in chemical language, the hyponitrite of the oxide of ethylene ( $\text{C}_4 \text{H}_5 \text{O} + \text{NO}_3$ ), would require to be somewhat better known than it is.

Liebig as quoted in Turner, gives its density at  $60^\circ$  as 947 and boiling point  $62^\circ$

|                                                                   |   |            |     |                            |            |
|-------------------------------------------------------------------|---|------------|-----|----------------------------|------------|
| Prof. Christison, that prepared by the<br>Edinburgh process ..... | " | "          | 899 | "                          | $70^\circ$ |
| Meissner, as quoted by Prof. Christison .....                     | " | "          | 909 | no boiling point           |            |
| The late Dr. Pereira.....                                         | " | $40^\circ$ | 886 | boiling point $70^\circ$   |            |
| Dumas .....                                                       | " | "          | 886 | no boiling point           |            |
| Regnault .....                                                    | " | No temp.   | 886 | boiling point $69^\circ.8$ |            |

He also says that "pure nitrous ether is colorless;" of this we have met with no specimen.

Mitscherlich gives it also as "colorless" ..... density at  $40^\circ$  as 886 and boiling point  $80^\circ$

|                                                                                              |   |            |     |                                     |  |
|----------------------------------------------------------------------------------------------|---|------------|-----|-------------------------------------|--|
| The Dublin Pharm. ....                                                                       | " | $60^\circ$ | 900 | no boiling point                    |  |
| The late Prof. Duncan, of Edinburgh,<br>states that when simply washed<br>with HO, its ..... | " | No temp.   | 912 | no boiling point                    |  |
| And after removing acid by KO .....                                                          | " | "          | 896 | "                                   |  |
| And when re-distilled .....                                                                  | " | "          | 866 | "                                   |  |
| We have thrice prepared it by Liebig's<br>method, and the product was .....                  | " | $60^\circ$ | 906 | boil. point $62^\circ$ — $64^\circ$ |  |

It is quite manifest that the densities and boiling points given cannot belong to one and the same fluid; nor can it be seen how the admixture of aldehyde of D. 790 at  $65^\circ$  and boiling at  $70^\circ$  can reconcile them. May it not be that  $\text{AeO} + \text{NO}_5$  is formed, in some cases, as well as  $\text{AeO} + \text{NO}_3$ ? Both its D. (1.112) and B. p. ( $185^\circ$ ) are high.

We have very often prepared the  $\text{AeO} + \text{NO}_3$  of the Edinburgh Ph., and have frequently been unable to bring up the D. to 899 by solution of  $\text{Ca} + \text{Cl}$  or washing. Weak solution of ammonia, however, we find to answer the purpose, and we are no longer annoyed by a density ranging from 886 upwards; from 899—900 is now easily arrived at.

It may be instructive to state the result of the re-distillation of the product got by Liebig's method. When procured, its boiling point was  $62$ — $64$ , and D. 900 at  $60^\circ$ . On re-distilling it, one-half had come over, and the thermometer stood at  $66^\circ$ ;

the D. of this first portion was 899—900 at  $60^{\circ}$ , and its B. p.  $62^{\circ}$ — $64^{\circ}$ . The temperature quickly rose in the distilling flask to  $70^{\circ}$ — $72^{\circ}$ , and a considerable quantity came over, the D. and B. p. of which were precisely the same as the first portion. The last portion came over between  $72^{\circ}$ — $80^{\circ}$ . Its D. was 900 at  $58^{\circ}$ , and its B. p.  $62^{\circ}$ — $64^{\circ}$ . Yellow vapors appeared in the distilling flask, and the small quantity of fluid left was strongly acid. Contrary to the indications of the thermometer, we find but one fluid partially decomposed in boiling.

In order to compare the formulæ of the different Pharmacopœias, and to do so fairly, the alcohol and  $\text{NO}_5$  made use of by each has been reduced by calculation to dry alcohol and dry  $\text{NO}_5$ , taking for data for these calculations the table of Gay Lussac, as given in Prof. Christison's *Dispensatory*, for the alcohol, and Ure's table for  $\text{NO}_5$  in Turner. The products also have been dealt with in the same way, and the loss of alcohol in each process found.

The following short tables will best tell their own story:—

|           | MATERIALS USED. |                   |  | THE PRODUCT CONTAINS |                            |
|-----------|-----------------|-------------------|--|----------------------|----------------------------|
|           | Dry Alcohol.    | Dry $\text{NO}_5$ |  | Dry Alcohol.         | $\text{AcO} + \text{NO}_3$ |
| London    | 28.143          | 2.982             |  | 17.356               | 4.140                      |
| Edinburgh | 32.547          | 8.368             |  | 21.93                | 6.975                      |
| Dublin    | 33.771          | 3.586             |  | 29.54                | 3.600                      |

Of dry alcohol, allowing for the hyponitrous ether, the loss in each process is:

|           |                              |        |        |                  |
|-----------|------------------------------|--------|--------|------------------|
| London    | 28.143 less found in product | 19.895 | = Loss | 8.248            |
| Edinburgh | 32.547                       | "      | "      | 26.208 = " 6.339 |
| Dublin    | 33.771                       | "      | "      | 31.757 = " 2.014 |

The per centage loss is—London, 29.3; Edinburgh, 19.47; Dublin, 5.96. Taking the strongest—the Edinburgh—as the standard  $28.905 = 6.975$  of  $\text{AcO} + \text{NO}_3$ , then 5.58 instead of 4.140 ought to be contained in the London, and 7.09 instead of 3.6 in the Dublin.

The above numbers refer to weight and to dry alcohol and dry  $\text{AcO} + \text{NO}_3$ ; but we have to deal with the bulk and with water therein, when Sp. Eth. Nit. is dispensed.

The bulk product of the

|           |       |                         |                                          |
|-----------|-------|-------------------------|------------------------------------------|
| London is | 28    | fluid ounce, containing | 4.60 of dry $\text{AcO} + \text{NO}_3$ . |
| Edinburgh | 38.75 | "                       | " 7.75                                   |
| Dublin    | 46.00 | "                       | " 4.00                                   |

and the medicinal value of these is by bulk—London, 16.43;

Dublin, 8.7; and Edinburgh, 20 per cent. of  $\text{AcO} + \text{NO}_3$ .\* Difference of density, which would make a slight alteration, has not been taken into account here, and with regard to these calculations, there can be no doubt as to the Edinburgh and Dublin results. The London, however, have gone on the extravagant supposition that the whole  $\text{NO}_5$  is converted into  $\text{NO}_3$ , and united with its equivalent of  $\text{AcO}$ , which is most unquestionably not the case. They are also based upon the supposition that the alcohol in the London product is of sp. gr. .825. The impossibility of finding any indisputable data rendered these necessary.

Without doubt the Edinburgh process, as modified by the Dublin College, is the best.\* It is the easiest, the safest and most productive; and it possesses this prime qualification—its results are defined and definite. There is no dubiety as to the quality or strength of the product. Its composition is fixed, and it can only vary by internal change or intentional admixture. It undergoes both of these, the first rendering the second absolutely necessary. The sp. eth. nit. of the Edinburgh Pharmacopœia changes very rapidly. In a very few days after its preparation, a large amount of free acid is found to exist in it, which goes on increasing; and its removal must be accomplished before the sweet nitre can be dispensed, unless all parties are regardless of the chemical constitution of what is prescribed. As an instance, let us suppose a very common case. That a prescription contains iodide of potassium and sweet spirit of nitre. If it is made up with the sweet spirit of nitre, almost universally found in use; no change, or a very small one, will take place upon the chemical constitution of the  $\text{KI}$ ; but if made up with Sp. Eth. Nit. of the Edinburgh Pharmacopœia, which has been made but a short time—a week perhaps—then, instead of  $\text{KI}$  and a colorless fluid, we will have a deep brown liquid, containing  $\text{KO} + \text{NO}_5$  and free iodine. But the Edinburgh preparation is not singular in undergoing this change. It takes place more or less in every sample we have met with, and, so far as we can

\* The  $\text{NO}_5$  ordered by the Edinburgh Pharmacopœia, is of D. 1500, which is an objection of more force than at first sight appears; for a pure acid of that D. is scarcely to be found in the market. Dr. D. MacLagen, however, has shown, what is practically valuable, than an increased quantity of a weaker acid will answer the purpose perfectly.

judge, just in proportion to the amount of  $\text{AcO} + \text{NO}_3$  in the preparation. The weaker it is, the better it keeps. Less acid is found in the fluid, just because less existed in it. It is to this proneness to change that we ascribe the almost universal departure from authority, both as to *modus operandi* and per centage of ether, which has taken place. The Pharmaceutical Chemist *cannot make* sweet spirit of nitre in drachms or half ounces every time he dispenses a prescription containing it. He must make or buy an article that will retain its properties for at least a reasonable time; and the manufacturing chemist cannot sell an article which spoils in a day or two, for no one will have it from him. Thus, both are compelled to hunt about for better processes, and not finding them, either to give up making or selling, as the case may be. Or else the Pharmaceutical Chemist buys and uses whatever is offered to him, asking no questions. We have met with no specimen which contained the full amount of  $\text{AcO} + \text{NO}_3$ , but we have met with it where it held internal evidence<sup>e</sup> that at one time it had contained all it ought. And we have found in our own experience that, after some weeks, a sweet nitre, originally made according to the Edinburgh Pharmacopœia, with 20 per cent. of  $\text{AcO} + \text{NO}_3$ , was deficient to a considerable extent, eight per cent. having disappeared.

The change which occurs in sweet spirit of nitre has been long known, and many endeavors have been made to prepare it without this liability. Some, indeed, deny that this liability is inherent in the preparation, and among others, the late esteemed Pereira mentioned that he had some which had been in his possession for years, "and which possessed only slight acidity." It is to be regretted that the formulæ and original strength of these keeping sweet spirits of nitre are not given. It is also asserted that sweet spirit of nitre made with  $\text{AcO} + \text{NO}_3$ , made according to Liebig's process, keeps better than that made by the ordinary process. So far as our experience goes, this last assertion is true; but the only vehicle we have found which will give a stable mixture is absolute alcohol—confirming Professor Christison's observations. It is obvious that the price of sweet spirit of nitre made with  $\text{AcO} + \text{NO}_3$ , procured by Liebig's process, would tend to render its use very limited indeed. But whether it would or no, are we at liberty to follow that mode?

We think not. We have already said that the product of the formulæ of all the colleges contain with  $\text{AcO} + \text{NO}_3$ , and rectified spirit, aldehyde, or the hydrated oxide of acetylene, ( $\text{C}_4\text{H}_2\text{O} + \text{HO}$ .) It is known to be contained in the spirit of nitre of the Pharmacopœia. Are we then at liberty to remove that which, though undoubtedly an impurity in  $\text{AcO} + \text{NO}_3$ , is yet an integral part of sweet spirit of nitre? There is some reason to believe that the presence of the aldehyde is the cause of the decomposition of Sp. Eth. Nit., but it may be, for aught we know, upon the presence of the aldehyde that some of the medicinal value of that preparation depends, and thus the question remains; will its removal, while it improves the keeping qualities, not destroy its medicinal value?

With regard to the use of absolute alcohol as the solvent of the ether, there does not appear to be any other good objection than the difficulty and expense of procuring it; and that is, though not insurmountable, yet a very serious objection.

But are these changes indeed absolutely necessary? A much weaker preparation has been in almost universal use for many years past, and not many complaints have been heard against it. The Edinburgh process is perfect in its details with, we think, one exception, namely, the use of milk of lime to neutralize the impure  $\text{AcO} + \text{NO}_3$ , sol. of ammonia, ordered by the Dublin formulæ, as already mentioned, having been found to answer better. But the proportion of  $\text{AcO} + \text{NO}_3$  is too great to give a fluid that will keep. In fine, we believe that, were the standard of all the colleges made 10 per cent., all the difficulties would be overcome. Such a preparation would keep a reasonable time, and be produced at a moderate price. It would give a spirit which would answer every purpose, and leave without an excuse any attempt at the production of a weaker, which will not be the case so long as conditions are laid upon the manufacturer which he finds it impossible to fulfil. The present formula tells him to make and mix 20 per cent. of hyponitrous ether with 80 per cent. of rectified spirit; it is so clear and excellent in its directions that neither doubt nor difficulty meets the operator—he can most easily comply with the demands of the formula. But he has those who supply the public to meet with, and they demand from him, and not unreasonably, that he shall supply



them with a spirit of nitre which will hold its integrity for a longer time than a week or ten days; and he can comply with this demand also. But he cannot conjoin the demands of the formula and the consumer—one or other must give way. It is surely bad policy to give the wrong-doer a good excuse for his malpractices. As it is at present, no honest manufacturer can advantageously enter into its preparation, for no one will make use of the genuine production. We have never been able to prepare a sweet spirit of nitre with 20 per cent. of the  $\text{AcO} + \text{NO}_2$  of the Edinburgh Pharmacopœia that did not begin to decompose within a day, and when sent out our friends have found it, both in respect of strength and free acid, so totally unlike anything they had hitherto met with, that they refused to have anything to do with it.

Before leaving the spirit of nitre of the Edinburgh Pharmacopœia, we may say that, while the tests given for its purity are perfectly accurate, they must be applied with a caution that the D. 847 may be given by the addition of water, and that the solution of  $\text{CaCl}$  be such as to contain about 40 per cent. of dry  $\text{CaCl}$ . It is to be observed, also, that the tests given are only applicable to a very recently prepared spirit. A sample made according to the Edinburgh Pharmacopœia, on Jan. 7th, of D. 847, and which separated by half its bulk of solution of  $\text{CaCl}$ , containing 40 per cent. of dry  $\text{CaCl}$ , 12 per cent. of  $\text{AcO} + \text{NO}_2$ , was tested on Jan. 17 with solution of  $\text{CaCl}$  of different strengths. The following are the results:

|                                           |              |                            |                                 |               |
|-------------------------------------------|--------------|----------------------------|---------------------------------|---------------|
| Sol. $\text{CaCl}$ containing             | 20 per cent. | dry $\text{CaCl}$ , sep'd. | of $\text{AcO} + \text{NO}_2$ , | 8.9 per cent. |
| "                                         | "            | 30                         | "                               | 11. "         |
| "                                         | "            | 40                         | "                               | 11.5 "        |
| "                                         | "            | 50                         | "                               | 10. "         |
| "                                         | "            | 60                         | "                               | 8. after two  |
| hours in a second experiment, 9 per cent. |              |                            |                                 |               |

It has already been said that the examination of some specimens marked "the best," from London, gave scarcely a trace of  $\text{AcO} + \text{NO}_2$ . This ought not to be ascribed to adulteration, for experiment has shown us that it is not only possible, but really the fact, that nearly the whole product may be drawn over before the production of  $\text{AcO}_2 + \text{NO}_2$  commences. The late Dr. Golding Bird, many years ago, made some investigations into the nature of the products left in the retort after the preparation of

spirit of nitre by the formula of the London Pharmacopœia. That which we would call your attention to in his results is the very large amount of hyponitrous ether found by him in that residue. He has not given the quantity found, but we are much mistaken if he does not give data for saying that by far the largest portion of the ether was left to be thrown away. This we suspect is the case still. In one experiment, where 14 fluid ounces were ordered to be drawn over, as being the amount of the product, nearly the whole came over before a trace of hyponitrous ether made its appearance.

We will give the details of an experiment made on Jan. 21st, 1856:—40 fluid ounces of alcohol, of D. 838, were mixed with  $3\frac{1}{2}$  fluid ounces of pure  $\text{NO}_3$ , of D. 1420 or thereby, (it was found to be 1415 at  $71^\circ$ ), and distilled. The quantity ordered to be distilled over is 28 fluid ounces. It boiled at  $176^\circ$ — $178^\circ$ , and when the temperature had reached  $182^\circ$ , 21 fluid ounces had come over into the receiver. The D. of this portion was .834, and was alcohol without the very slightest taste or smell of nitrous ether. The next portion came over below  $184^\circ$ ; it measured 3 fluid ounces, and its D. was .837, and in other respects altogether like the first. The third portion measured about 4 fluid ounces; its D. was .840, and was not perceptibly different from fine spirit. The temperature had now reached  $188^\circ$ . The fourth portion measured 3 fluid ounces; its D. .845, and it was merely flavored with Sp. Eth. Nit. The temperature was now  $192^\circ$ . The fifth portion was  $1\frac{1}{2}$  fluid ounces of D. .854, tasting distinctly of sweet nitre. Up till this period no other action could be perceived than ebullition. There was no escape of gas through the receiver. When, however, those  $32\frac{1}{2}$  fluid ounces, or thereabout, had been distilled off, action began, the thermometer falling from  $192^\circ$  to  $182^\circ$ ; action was vigorous to  $180^\circ$ , where it remained for a short time, and on removing the gas-burner it fell gradually to  $168^\circ$ , and all action was nearly at an end. The last portion amounted to  $8\frac{1}{2}$  fluid ounces; its D. was 890; and when treated with half its bulk of solution of  $\text{CaCl}$ , containing 40 per cent. of dry  $\text{CaCl}$ , it separated 46 per cent. of ether, whether the  $\text{AcO} + \text{NO}_3$  of the Edinburgh Pharmacopœia was not examined into. The first, second and third portions were mixed together, and gave faint indications of aldehyde, as did the fourth. With the

fifth, alcoholic solution of KO gave distinct coloration ; and with the sixth, the color was deep. We think this experiment bears out the remark that nearly the whole product may come over without a particle of  $\text{AeO} + \text{NO}_3$ .—*London Pharm. Journ.*

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## NOTE ON THE DETECTION OF STRYCHNIA.

BY MARSHAL HALL, M.D., ETC.

The detection of strychnia as a poison is, at this moment, of deep public interest.

When the *chemical* test fails, there remains, I think, another—the *physiological*. Having long studied the effects of strychnia on the animal economy (I have sent two papers on this subject to the Institute of France), I am persuaded that these effects on the *most excitable* of the animal species are at once the most delicate and specific tests of this poison.

I have just performed two experiments, and only two, for want of materials for more.

I requested Mr. Lloyd Bullock, of Hanover Street, to dissolve one part of the acetate of strychnia in one thousand parts of distilled water, adding a drop or two of acetic acid.

I then took a frog, and having added to one ounce of water one one-hundredth part of a grain of the acetate of strychnia, placed the frog in this dilute solution. No effect having been produced, one one-hundredth of a grain of the acetate was carefully added. This having produced no effect, in another hour one one-hundredth of a grain of the acetate was again added, making the three one-hundredths, or about the thirty-third part of a grain. In a few minutes the frog became violently tetanic, and though taken out and washed, died in the course of the night.

I thus detected, in the most indubitable manner, one thirty-third part of a grain of the acetate of strychnia. It appeared to me that had more time been given to the experiment, a much minuter quantity would be detectible.

I placed the second frog in one ounce of distilled water, to which I had added the one two-hundredth part of a grain of the acetate of strychnia. At the end of the first, the second, and

the third hours, other similar additions were made, no symptoms of strychnism having appeared. At the end of the fifth hour, the frog having been exposed to the action of one-fiftieth part of a grain of the acetate of strychnia, tetanus came on, and under the same circumstances of removal and washing, as in the former experiment, proved fatal in its turn.

I thus detected one-fiftieth part of a grain of the poisonous salt by phenomena too vivid to admit of a moment's doubt, the animal, on the slightest touch, became seized with the most general spasmodic, or, rather, tetanoid rigidity. And this phenomenon, alternating with perfect relaxation, was repeated again and again.

As the nerve and muscles of the frog's leg, properly prepared, have been very aptly designated as galvanoscopic, so the whole frog, properly employed, becomes strychnoscopic.

In cases of suspected poison from strychnia, the contents of the stomach and intestines, and the contents of the heart, blood-vessels, &c., must be severally and carefully evaporated, and made to act on lively frogs, just taken from the ponds or mud. I need scarcely say, that taken in winter the frog will prove more strychnoscopic than in summer, in the early morning than in the evening.

The *best* mode of performing the experiment also remains to be discovered, with all its details and precautions—an inquiry into which I propose to enter shortly. Meantime this note may not be without its utility.

*Princes Street, Hanover Square, January, 1856.*

POSTSCRIPT.—I have repeated my experiment. I placed one frog, fresh from the pools, in an ounce of water, containing the one-fiftieth part of a grain of the acetate of strychnia; a second in the same quantity of water, containing the one-sixty-sixth, a third containing one-one-hundredth, and a fourth containing one two-hundredth. All became tetanic in two or three hours, except the third, which was a *female* (the others being males), which required a longer time.

The one two-hundredth part of a grain of the acetate of strychnia is therefore detectible by means of the test conferred by physiology.

We now placed a male frog in one four-hundredth part of a grain of the acetate of strychnia, dissolved in six drachms of water. In three hours and a half it became violently tetanic.

The fresh frog is, therefore, at this season, strychnoscopic of one four-hundredth part of a grain of the acetate of strychnia, and probably to a much minuter quantity, which ulterior experiments must show.

In the two other experiments, the one five-hundredth and the one one-thousandth of a grain of the acetate of strychnine were detected.—*Lancet, in Pharm. Jour.*

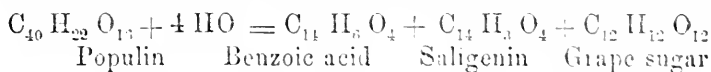
## POPULIN.

The crystalline substance obtained by Bracconot in 1830, from the bark and leaves of *Populus tremula*, consists of—

|          |       |       |       |       |
|----------|-------|-------|-------|-------|
| Carbon   | 56.49 | 56.49 | 56.36 | 56.34 |
| Hydrogen | 6.39  | 6.13  | 6.29  | 6.10  |
| Oxygen   | 37.12 | 37.38 | 37.35 | 37.56 |

And its composition may be represented by the formula  $C_{40} H_{22} O_{23}$ , or by  $C_{40} H_{22} O_{16} + 4 H_2O$ ; since by heating at  $212^{\circ} F.$ , it loses 8.43 per cent. water; and four equivalents  $H_2O$  correspond with 8.45 per cent.

Dilute hydrochloric acid dissolves populin, and at  $212^{\circ} F.$  decomposes it, forming, together with benzoic acid and grape sugar, a resin which melts in boiling water, and has all the characters of saliretin. When populin is heated with a mixture of sulphuric acid and bichromate of potash, it evolves hyduret of salieyle, which is inconsistent with the view that populin is a conjugate compound of saliretin, grape sugar, and benzoic acid. Piria considers it to be a compound of saligenin, grape sugar, and benzoic acid; and that the saligenin separated in its decomposition is resolved by the further action of acids into saliretin:



Under the influence of decomposing casein, at a moderate temperature, and in contact with carbonate of lime, populin is de-

composed with production of saligenin, lactic acid, and benzoate of lime.

Among the three substances supposed by Piria to exist in populin; saligenin and grape sugar have been recognized as constituents of salicine; so that there was reason to suppose populin might be converted into salicine by separation of the benzoic acid. This was found to be the case when populin is boiled with baryta water or milk of lime. In order to obtain the salicine, the benzoic acid is precipitated by means of perchloride of iron, excess of iron removed by lime, and excess of lime by carbonic acid. The liquid then yields salicine on evaporation.

Piria found the quantity of benzoic acid yielded in this way to be 28.90 per cent. This corresponds with the view he holds of its composition, which would require 26.68 per cent.

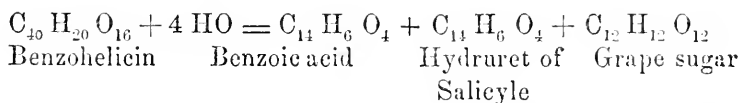
The salicine thus obtained is identical in all respects with the natural salicin, its composition being represented by the formula  $C_{20} H_{13} O_{14}$ .

The conversion of populin into salicin may be effected even by heating it with an alcoholic solution of ammonia to  $212^{\circ}$  F.

Weak nitric acid acts upon it only at  $212^{\circ}$  F., forming a yellow solution which, after long boiling, evolves vapor having the odor of hydruret of salicyl. When heated with ordinary nitric acid, populin is probably converted into nitrobenzoic acid and oxalic acid.

By the action of nitric acid, 1.30 s. g., populin is converted into a substance which Piria calls benzohelicin. The substance has great analogy with helicin; it crystallizes in silky needles; sulphuric acid dissolves it with yellow color, and the solution, when diluted with water, evolves hydruret of salicyl. The same substance is formed by boiling with hydrochloric acid with separation of benzoic acid. In the cold, caustic alkalies do not alter benzohelicin, but at  $212^{\circ}$  F. it dissolves with intense gold yellow color, yielding the same products, together with grape sugar, when the alkaline solution is neutralized by an acid.

The constitution of this substance would appear, therefore, to be analogous to that of populin. Its composition is represented by the formula  $C_{10} H_{20} O_{16}$ ; by heating it does not lose water. The above decomposition may be represented by the equation:



Benzohelicin may be converted into helicin by boiling with a base that abstracts benzoic acid without acting upon helicin.—*Pharm. Jour. and Trans. Feb. 1, 1856.*

## ON THE DECOMPOSITION OF IODIDE OF STARCH BY THE ANIMAL FLUIDS.

BY JOHN C. DALTON, JR., M. D.

Professor of Physiology in the College of Physicians and Surgeons, New York.

Some months since, while experimenting on the digestion of starch, and its conversion into sugar in the intestine, I observed that the iodide of starch became very rapidly decolorized on being digested, at the temperature of 100° F., with the intestinal fluids taken from the duodenum of a recently killed dog. It appeared, also, that this effect was produced some time before any sugar had made its appearance in the mixture, and would even take place, with nearly equal promptness, at the ordinary temperature of the air. It seemed, at first, probable, that the decolorization was owing to a partial alteration of the starch, which passed into an intermediate condition, before undergoing its final conversion into sugar. Subsequent examination, however, showed that it was due to a simple decomposition of the iodide of starch by the organic substances of the intestinal fluids. Nearly all the animal fluids, indeed, when in a fresh condition, not only decolorize, more or less promptly, the blue iodide of starch, but prevent entirely the usual reaction between starch and iodine, when this latter substance is present in small quantity. When the iodide of starch, ready formed, comes in contact with these fluids, the iodine leaves the starch and combines with the organic matters; and it is under the form of such an organic combination that the iodine is absorbed from the intestine, passes through the circulation, and is discharged by the urine. The precaution, therefore, which is sometimes inculcated, in the administration of free iodine, to give the medicine in the interval between two meals, lest it should combine with the starchy matters of the food, and become insoluble and inert, is

altogether superfluous; since starch cannot retain the iodine in combination with it, in presence of the digestive fluids.

The iodide of starch, in the form of paste, has, indeed, been occasionally recommended as one mode of administering the drug; but I am not aware that the mode in which iodine, in this state of combination, becomes absorbed, has yet been directly investigated.

The solution of starch employed in the following experiments, was made by boiling five grains of starch in the ounce of water, and allowing the fluid to cool. The experiments were all made at the ordinary temperature of the atmosphere.

1. If  $\text{ʒi}$  of *saliva* be mixed with  $\text{ʒi}$  of iodine water, and  $\text{ʒss}$  of the starch solution added, no blue color is produced; but a drop or two of nitric acid immediately turns the mixture blue and opaque.

$\text{ʒi}$  of iodine water is added to  $\text{ʒi}$  of the starch solution, making an opaque blue fluid;  $\text{ʒii}$  of saliva are then added, and the whole shaken up. The mixture becomes nearly colorless at the end of five minutes. The blue color is then restored by a drop or two of nitric acid.

2. If  $\text{ʒi}$  of iodine water, with  $\text{ʒi}$  of starch, be mixed with an equal quantity of fresh *pancreatic juice* (from the dog) the blue color is entirely dissipated in less than one minute.

3. Light yellow, nearly clear *bile*, from the dog's gall-bladder, destroys immediately the blue color of an equal quantity of starch and iodine water. On the addition of nitric acid, the blue color is restored, modified somewhat by the green tinge which the bile takes with nitric acid.

4. A healthy dog, kept for 24 hours without food, was killed by section of the medulla, and the scanty, light yellowish, frothy *fluid of the small intestine* collected. It decolorized immediately the blue iodide of starch, made in the above manner, and the blue color was restored by nitric acid.

A dog was kept for 24 hours without food, then fed with fresh lean meat, and killed half an hour after feeding. The intestinal fluids from the upper half of the small intestine acted on the iodide of starch in the same manner as in the last experiment.

5. If  $\text{ʒii}$  of the clear yellowish *serum of the blood* (horse's



blood) be added to  $\text{gii}$  of iodide of starch, the mixture loses its blue color immediately. It is brought back by nitric acid.

6 If  $\text{gi}$  of healthy human *urine* be added to  $\text{gi}$  of iodide of starch, the mixture is decolorized in five seconds. The blue color is restored by nitric acid.

The above effect is produced whether the urine be acid or slightly alkaline in reaction.

$\text{gi}$  of urine mixed with  $\text{sv}$  of iodine water effectually prevents the reaction between the iodine and starch.

7. The *gastric juice* acts differently, in this respect, according to circumstances. If taken from the stomach of the fasting animal (by irritation, through a gastric fistula, with a metallic catheter), it is clear and colorless, and does not interfere at all with the reaction of starch and iodine. But that which is collected during the first half hour after feeding the animal on cooked meat, and which is slightly yellowish in color, and contains a little albuminose in solution, interferes with the reaction very perfectly.  $\text{gi}$  of such gastric juice decolorizes an equal quantity of iodide of starch in less than a minute.

A specimen of such gastric juice, however, containing a little albuminose, which had been kept for some months, was found to have lost almost entirely its power of preventing the union between starch and iodine.

If the colorless gastric juice, taken from the fasting animal, which has no effect on the iodide of starch, be digested for an hour at the temperature of  $100^{\circ}$  F., with finely cut boiled meat, and then filtered, the filtered fluid interferes with the reaction of iodine and starch, like the other animal fluids.

The iodine, in these cases, probably combines, as already intimated, directly with the organic (albuminoid) matters of the animal fluids, and is detected by starch only after these organic matters have been destroyed by nitric acid. It is not, however, easy to demonstrate this. If the serum of the blood, for example, be boiled with an excess of sulphate of soda, by which all of the albumen, and most of the other organic substances are coagulated, the clear filtered fluid interferes with the reaction of starch and iodine as before. It might be supposed that the iodine, on the contrary, was converted into an iodide of potassium or sodium, under the influence of alkaline carbonates, and that

it passed, under this form, through the circulation and into the excretions. Several circumstances, however, are opposed to this view. First, the iodide of starch is decomposed, not only by the saliva, serum of the blood, and pancreatic juice, which are alkaline; but also, quite as promptly, by urine and gastric juice, which are acid in reaction. Secondly, the gastric juice, as already mentioned, has no power of preventing the union of starch and iodine, when taken fresh from the stomach of the fasting animal, but yet gains this power in a high degree when artificially digested with meat at 100° F. It seems nearly certain, therefore, that the iodine combines, in this instance, with some of the albuminoid matters dissolved by the gastric juice.

This reaction of iodine with the animal substances is further illustrated, in a very striking manner, by the following experiments, performed at the suggestion and with the assistance of my friend, Dr. Wm. H. Ellett;—

I. If a mixed solution of boiled starch and iodide of potassium be spread upon the surface of the skin, and the two poles of a galvanic battery applied to the moistened surface a short distance from each other,<sup>2</sup> no perceptible discoloration appears, provided the galvanic current be not very powerful; while if the same poles be applied to a piece of bibulous paper, moistened with the same solution, the blue iodide of starch appears at once at the positive pole.

II. If the negative pole of the battery be placed in contact with the bibulous paper, moistened as above, the positive pole taken in the left hand, and the circuit completed by touching the bibulous paper with the right forefinger, the shock is felt, but no discoloration of the paper is produced; but if the circuit be completed by a steel needle, held in the right hand, a dark stain immediately appears on the paper.

III. The negative pole was placed in contact with the moistened paper, and a fresh piece of animal membrane (uterus of the cow) attached by one end to the positive pole. The other end of the animal membrane was then cut to a fine point, by which the circuit was completed on the paper; but no stain occurred. A steel needle was then thrust through the animal membrane, and the circuit completed by the point of the needle, when the discoloration of the paper immediately appeared.

It appears, then, that whenever iodine is set free from its combination with potassium, in presence of starch and an animal organic substance, either living or recently dead, it combines with the organic substance in preference to uniting with the starch.

The influence of the animal fluids in preventing the mutual reaction of iodine and starch is, as might be expected, not unlimited, but depends on the relative quantities of the iodine and the organic substance with which it combines. If there be but little iodine present, it is all taken up by the organic substance, and shows no reaction with starch; while if present in large quantity, it attacks the starch also, and produces the characteristic blue color. Thus, one drachm of iodine water, mixed with one drachm of gastric juice holding albuminose in solution, has no reaction on starch; but a mixture of two drachms of the former to one drachm of the latter, strikes with starch a perceptible blue color. A single drop of the alcoholic tincture of iodine, mixed with one drachm of gastric juice, is sufficient to produce a blue color with one drop of the starch solution. Other animal fluids, however, appropriate larger quantities of free iodine. Two drops of tincture of iodine, for example, are completely saturated by one drachm of healthy urine, so that the mixture gives no reaction with starch; three drops give only a purplish color, while four drops strike a deep blue color on the addition of starch.

With the adoption of proper precautions, the reactions described above will not expose us to any serious error when endeavoring to ascertain the presence of either starch or iodine in the animal fluids. In testing for iodine, we have only to add a little nitric acid after dropping in the starch; and in testing for starch, we should be sure to add iodine enough to more than saturate the albuminoid substances present. It is at least evident, however, from the foregoing facts, that iodine cannot possibly exist in a free state in the animal fluids, but is always in either a metallic or an organic combination.—*Am. Journ. Med. Sci. April, 1856.*

## A CASE OF POISONING BY STRAMONIUM SEEDS.

By PROF. W. SHERWOOD.

About eight o'clock in the evening, August, 1854, I was called in great haste to see a little girl three years old, the daughter of a German citizen residing in the northwestern part of Cincinnati. The child was in a state of partial stupor, from which it was difficult to arouse her sufficiently to gain her attention. She had at first complained of dizziness, then of headache, and when I first saw her the pupils were greatly dilated, and did not diminish on the approaching of a candle. She was unable to speak, swallowed with great difficulty, and soon lost all power of swallowing. There was constant muscular tremor throughout the system, and frequently somewhat obscure convulsions.

The child, when first attacked, stated that she had eaten some seeds, and a broken pod from the stramonium, or Jamestown weed, was found where she had been playing in the yard. The parents, however, not aware of the extremely poisonous property of these seeds, did not send for medical advice until the alarming symptoms I have described made their appearance.

Ten grains of sulphate of zinc were given in solution, and this failing to produce emesis, an effort was made to repeat it, but the child could not swallow. I then went to a neighboring drug store, and to the offices of two or three physicians, hoping to obtain a stomach pump, but failed. I then procured the longest and largest catheter I could find, together with a two ounce glass syringe, and returned to my little patient. Having passed the catheter into the stomach, a second dose of sulphate of zinc was thrown in by means of the syringe, but emesis did not follow. I now ordered finely ground mustard to be mixed with warm water to the consistency of milk, and injected a syringe full of this into the stomach. In a few minutes very copious emesis occurred, bringing away nearly a dozen green stramonium seeds, mixed with the food she had eaten at supper soon after swallowing the seeds.

Her stomach was washed out by two or three injection of warm water, by means of a stomach pump which had been brought by a messenger who had been dispatched for one, but only two or three more seeds could be obtained. A syringe full of strong

coffee was now administered and the patient placed upon a bed. She speedily began to show signs of returning consciousness, soon was able to swallow coffee, and a small dose of carbonate of ammonia which was prescribed, and then for the first time evinced an inclination for sleep. I ordered her to be let alone, and she soon fell into a quiet slumber which continued until morning. When she awoke, she was somewhat weak, but went to her play as usual, and seemed to experience no further inconvenience.

One circumstance struck me with some force during the excitement of the occasion; this was the self-upbraiding of the child's father. "Oh," said he, "if I had only cut these weeds down. I was about to do it, the other day, but when I thought they looked so green and cool I would let them stand." "But," he continued, "if I live till morning, I will cut them all down before breakfast." How many, like this honest German, by neglecting precautions, the propriety of which was or should have been obvious, have been compelled to confess their negligence or want of forethought, when it was too late.—*College Journal*.

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## Varieties.

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*On Perfumery.* By SEPTIMUS PIESSE.

(Continued from page 180.)

By way of personal adornment, few things are of more ancient origin than the practice of painting the face, dyeing the hair, and blackening the eyebrows and eyelashes.

There is a practice universal among the females of the higher and middle classes in Egypt, and very common among the lower orders, which is, that of blackening the edge of the eyelids, both above and below the eye, with a black powder, which they term *kohl*. The *kohl* is applied with a small probe of wood, ivory, or silver, tapering towards the end, but blunt. This is moistened sometimes with rose-water, then dipped in the powder, and drawn along the edges of the eyelids. It is thought to give a very soft expression to the eye, the size of which, in appearance, it enlarges: to which circumstances probably Jeremiah refers when he writes, "Though thou rentest thy face (or thine eyes) with painting, in vain shalt thou make

thysself fair." (Jer. iv. 30). See also Lane's *Modern Egyptian*, vol. i. p. 31, *et seq.*

A singular custom is observable both among Moorish and Arab females—that of ornamenting the face between the eyes with clusters of bluish spots or other small devices, and which, being stained, become permanent. The chin is also spotted in a similar manner, and a narrow blue line extends from the point of it, and is continued down the throat. The eyelashes, eyebrows, and also the tips and extremities of the eyelids, are colored black. The soles, and sometimes other parts of the feet, as high as the ancles, the palms of the hands, and the nails, are died with a yellowish red with the leaves of a plant called Henna (*moutinidæ*), the leaf of which somewhat resembles the myrtle, and is dried for the purposes above mentioned. The back of the hand is often colored and ornamented in this way with different devices. On holidays they paint their cheeks of a red brick color, a narrow red line being also drawn down the temples.

In Greece, "for coloring the lashes and sockets of the eye they throw incense or gum labdanum on some coals of fire, intercept the smoke which ascends with a plate, and collect the soot. This I saw applied. A girl, sitting cross-legged as usual on a sofa, and closing one of her eyes, took the two lashes between her fore-finger and thumb of her left hand, pulled them forward, and then, thrusting in at the external corner a sort of bodkin or probe which had been immersed in the soot and withdrawing it, the particles previously adhering to the probe remained within the eyelashes."—Chandler's *Travels in Greece*.

Dr. Shaw states that among curiosities that were taken out of the tombs at Sahara relating to Egyptian women, he saw a joint of the common reeds, which contained one of these bodkins, and an ounce or more of this powder.

In England the same practice is adopted by many persons that have grey hair; but instead of using the black material in the form of a powder, it is employed as a crayon, the color being mixed with a greasy body, such as the brown and black stick pomatums, described in the previous article.

#### TURKISH HAIR DYE.

In Constantinople there are some persons who devote themselves to the preparation of cosmetics, and acquire much money thereby. In particular there are some Armenians who are well acquainted with the business, and obtain large sums of money from those desirous of learning this art. Amongst these cosmetics is a black dye for the hair, which, according to Landerer, is prepared in the following manner:

Finely pulverized galls are kneaded with a little oil in a paste, which is roasted in an iron pan until the oil vapors cease to evolve, upon which the residue is triturated with water into a paste, and heated again to dryness. At the same time a metallic mixture, which is brought from Egypt to the commercial marts of the East, and which is termed in Turkish *Rastikope-*

*tra*, or *Rastik-Yuzi*, is employed for this purpose. This metal, which looks like dross, is by some Armenians intentionally fused, and consists of iron and copper. It obtains its name from its use for the coloration of the hair, and particularly the eyebrows—for *rastik* means eyebrows, and *susi* stone. The fine powder of this metal is as intimately mixed as possible with the moistened gall mass into a paste, which is preserved in a damp place, by which it acquires the blackening property. In some cases this mass is mixed with the powder of odorous substances which are used in the seraglio as perfumes, and called *karsi*, that is, pleasant odor: and of these the principal ingredient is ambergris. To blacken the hair, a little of this dye is triturated in the hand or between the fingers, with which the hair or beard is well rubbed. After a few days the hair becomes very beautifully black, and it is a real pleasure to see such fine black beards as are met with in the East among the Turks who use this black dye. Another and important advantage in the use of this dye consists therein, that the hair remains soft, pliant, and for a long time black, when it has been once dyed with this substance. That the coloring properties of this dye are to be chiefly ascribed to the pyrogallie acid, which can be found by treating the mass with water, may be with certainty assumed.

## LITHARGE HAIR DYE.

|                   |   |   |   |   |                   |
|-------------------|---|---|---|---|-------------------|
| Powdered litharge | . | . | . | . | 2 lb.             |
| Quick lime        | . | . | . | . | $\frac{1}{4}$ lb. |
| Calcined magnesia | . | . | . | . | $\frac{1}{2}$ lb. |

Slake the lime, using as little water as possible to make it disintegrate, then mix the whole by a seive.

## ANOTHER WAY.

|                      |   |   |   |   |       |
|----------------------|---|---|---|---|-------|
| Slaked lime          | . | . | . | . | 3 lb. |
| White lead in powder | . | . | . | . | 2 lb. |
| Litharge             | . | . | . | . | 1 lb. |

Mix by sifting, bottle, and well cork.

*Directions* to be sold with the above.—“Mix the powder with enough water to form a thick creamy fluid; with the aid of a small brush, completely cover the hair to be dyed with this mixture: to dye a light brown, allow it to remain on the hair four hours; dark brown, eight hours; black, twelve hours. As the dye does not act unless it is moist, it is necessary to keep it so by wearing an oiled silk, india-rubber, or other waterproof cap.

“After the hair is dyed, the refuse must be thoroughly washed from the head with plain water; when dry, the hair must be oiled.”

## SIMPLE SILVER DYE.

(Otherwise “Vegetable Dye.”)

|                   |   |   |   |   |         |
|-------------------|---|---|---|---|---------|
| Nitrate of silver | . | . | . | . | 1 oz.,  |
| Rose water        | . | . | . | . | 1 pint. |

Before using this dye it is necessary to free the hair from grease by washing it with soda or pearlash and water. The hair must be quite dry.

prior to applying the dye, which is best laid on with an old tooth-brush. This dye does not "strike" for several hours. It needs scarcely be observed that its effects are more rapidly produced by exposing the hair to sunshine and air.

#### HAIR DYE, WITH MORDANT.

##### *Brown.*

|                                             |           |                       |
|---------------------------------------------|-----------|-----------------------|
| Nitrate of silver                           | . . . . . | 1 oz., blue bottles.  |
| Rose water                                  | . . . . . | 8 oz.,                |
| <i>The Mordant.</i> —Sulphuret of potassium |           | 1 oz., white bottles. |
| “ Water                                     | . . . . . | 8 oz.                 |

##### *Black.*

|                                             |           |                       |
|---------------------------------------------|-----------|-----------------------|
| Nitrate of silver                           | . . . . . | 1 oz., blue bottles.  |
| Water                                       | . . . . . | 6 oz.                 |
| <i>The Mordant.</i> —Sulphuret of potassium |           | 1 oz., white bottles. |
| “ Water                                     | . . . . . | 6 oz.                 |

The mordant is to be applied to the hair first; when dry, the silver solution.

Great care must be taken that the sulphuret is fresh made, or, at least, well preserved in closed bottles, otherwise, instead of the mordant acting to make the hair black, will tend to impart a *yellow* hue. When the mordant is good, it has a very disagreeable odor, and although this is the quickest and best dye, its unpleasant smell has given rise to the

##### INODOROUS DYE.

*Blue Bottles.*—Dissolve the nitrate of silver in the water as in the above, then add liquid ammonia by degrees until the mixture becomes cloudy from the precipitate of the oxide of silver, continue to add ammonia in small portions until the fluid again becomes bright from the oxide of silver being redissolved.

*White Bottles.*—Pour half a pint of boiling rose-water upon three ounces of powdered gall-nuts; when cold, strain and bottle. This forms the mordant, and is now in the same way as the first-named dye, like the sulphuret mordant. It is not so good a dye as the previous one.

##### FRENCH BROWN DYE.

*Blue Bottles.*—Saturated solution of sulphate of copper; to this add ammonia enough to precipitate the oxide of copper and redissolve it (as with the silver in the above), producing the azure liquid.

*White Bottles.*—*Mordant*—Saturated solution of prussiate of potass.

Artificial hair, for the manufacture of perukes, is dyed in the same manner as wool.

There are in the market several other hair dyes, but all of them are but modifications of the above, possessing no marked advantage.

##### QUICK DEPILATORY OR RUSMA.

##### *For removing hair.*

As the ladies of this country consider that the growth of hair upon the



upper lip, upon the arms, and on the back of the neck, to be detrimental to beauty, those who are troubled with such physical indications of good health and vital stamina have long had recourse to rasma or depilatory for removing it.

This or analogous preparations were introduced into this country from the East, rasma having been in use in the harems of Asia for many ages.

Best slaked lime . . . . . 3 lb.

Orpiment, in powder . . . . .  $\frac{1}{2}$  lb.

Mix the material by means of a drum sieve; preserve the same for sale in well-corked or stoppered bottles.

*Directions* to be sold with the above. Mix the depilatory powder with enough water to render it of a creamy consistency; lay it upon the hair for about five minutes, or until its caustic action upon the skin renders it necessary to be removed; a similar process to shaving is then to be gone through, but instead of using a razor, operate with an ivory or bone paper knife; then wash the part with plenty of water, and apply a little cold cream.

The precise time to leave depilatory upon the part to be depilated cannot be given, because there is a physical difference in the nature of hair. "Raven tresses" require more time than "flaxen locks;" the sensitiveness of the skin has also to be considered. A small feather is a very good test for its action.

A few readers, will, perhaps, be disappointed in finding that I have only given one formula for depilatory; the receipts might easily have been increased in number but not in quality; the use of arsenical compounds is objectionable, but it undoubtedly increases the depilating action of the compounds. A few compilers of "Receipt Books," "Supplements to Pharmacopœias," and others, add to the lime, "charcoal powder," "carbonate of potass," "starch," &c., but what action have these materials—chemically—upon hair? The simplest depilatory is moistened quick lime, but it is less energetic than the mixture recommended above; it answers very well for tanners and feltmongers; with whom time is no object.

#### ABSORBENT POWDERS.

A lady's toilet-table is incomplete without a box of some absorbent powder; indeed, from our earliest infancy powder is used for drying the skin with the greatest benefit—no wonder that its use is continued in advanced years, if, by slight modifications in its composition, it can be used not only as an absorbent, but as a means of "personal adornment." We are quite within limits in stating that many tons-weight of such powders are used in this country annually. They are principally composed of various starches, prepared from wheat, potatoes, and various nuts, mixed, more or less, with powdered tale—of Haily, steatite, (soap-stone) French chalk, oxide of bismuth, and oxide of zinc, &c. The most popular is what is termed

## VIOLET POWDER.

|                   |                   |                  |                   |
|-------------------|-------------------|------------------|-------------------|
| Wheat starch      | 12 lb.            | Otto of Bergamot | $\frac{1}{4}$ oz. |
| Orris root powder | 2 lb.             | Otto of cloves   | 2 drs.            |
| Otto of lemon     | $\frac{1}{2}$ oz. |                  |                   |

## ROSE FACE POWDER.

|              |                   |                |        |
|--------------|-------------------|----------------|--------|
| Wheat starch | 7 lb.             | Otto of rose   | 2 drs. |
| Rose pink    | $\frac{1}{2}$ dr. | Otto of santal | 2 drs. |

## PLAIN OR UNSCENTED HAIR POWDER

Is pure wheat starch.

## FACE POWDER.

|        |       |                  |       |
|--------|-------|------------------|-------|
| Starch | 1 lb. | Oxide of bismuth | 4 oz. |
|--------|-------|------------------|-------|

## PERLE POWDER.

|                  |       |               |       |
|------------------|-------|---------------|-------|
| French chalk     | 1 lb. | Oxide of zinc | 1 oz. |
| Oxide of bismuth | 1 oz. |               |       |

## BLANC DE PERLE

Is pure oxide of bismuth in powder.

## FRENCH BLANC

Is levigated tale passed through a silk sieve.

This is the best face powder made, particularly as it does not discolor from emanation of the skin or impure atmosphere.

## LIQUID BLANC (for theatrical use.)

The use of a white paint by actresses and dancers is absolutely necessary; great exertion produces a florid complexion, which is incompatible with certain scenic effects, and requires a cosmetic to subdue it.

Madame V——, during her stage career, has probably consumed more than half a hundred-weight of oxide of bismuth, prepared thus:

|                             |         |
|-----------------------------|---------|
| Rose or orange-flower water | 1 pint. |
| Oxide of bismuth            | 4 oz.   |

Mixed by long tituration.

## CALCINED TALC

Is also extensively used as a toilet powder, and is sold under various names; it is not so unctuous as the ordinary kind.

## ROUGE AND RED PAINTS.

These preparations are in demand, not only for theatrical use, but by private individuals; various shades of color are made, to suit the complexions of the blonde and brunette—one of the best kind is that termed

## BLOOM OF ROSES.

|                       |                   |                         |                   |
|-----------------------|-------------------|-------------------------|-------------------|
| Strong liquid ammonia | $\frac{1}{2}$ oz. | Rose-water              | 1 pint.           |
| Finest carmine        | $\frac{1}{4}$ oz. | Esprit de rose (triple) | $\frac{1}{2}$ oz. |

Place the carmine into a pint bottle, and pour on it the ammonia; allow them to remain together, with occasional agitation, for two days, then add the rose-water and esprit, and well mix. Stand the bottle in a quiet situation for a week: any precipitation of impurities from the carmine will sub-

side; the supernatant "Bloom of Roses" is then to be bottled for sale. If the carmine was perfectly pure there would be no precipitate; nearly all the carmine purchased from the makers is more or less sophisticated, its enormous price being a premium to its adulteration.

Carmine cannot be manufactured *profitably* on a small scale for commercial purposes: four or five manufacturers supply the whole of Europe! M. Titard, Rue Grenier St. Lazare, Paris, produces, without doubt, the finest article—singular enough, however, the principal operative in the establishment is an old Englishman.

"The preparation of the finest carmine is still a mystery, because, on the one hand, its consumption being very limited, few persons are engaged in its manufacture; and, upon the other, the raw material being costly, extensive experiments on it cannot be conveniently made."—Dr. Ure.

In the *Encyclopédie-Roret* will be found no less than a dozen recipes for preparing carmine; the number of formulæ will convince the most superficial reader that the true form is yet withheld.

Analysis has taught us its exact composition, but a certain dexterity of manipulation and proper temperature is also important to know.

Most of the recipes given by Dr. Ure, and others, are from this source, but as they possess no practical value we refrain from reprinting them.

#### TOILET ROUGES

Are prepared, of different shades, by mixing fine carmine with tale powder, in different proportions—say one drachm of carmine to two ounces of tale, or one carmine to three of tale, and so on; these rouges are sold in powder, and also in cake or china pots, for the latter the rouge is mixed with a minute portion of solution of gum tragacanth. M. Titard prepares a great variety of rouges: in some instances the coloring matter of the cochineal is spread upon thick paper and dried very gradually, it then assumes a beautiful green tint; this curious optical effect is also observed in "pink saucers." What is known as Chinese book rouge, is evidently made in the same way, and has been imported into this country for many years.

When the bronze green cards are moistened with a piece of damp cotton wool, and applied to the lips or cheeks, the color assumes a beautiful rosy hue. Common sorts of rouge, called "theatre rouge," is made from the Brazil wood lake; another kind is derived from the safflower (*Carthamus tinctorius*); from this plant also is made

#### PINK SAUCERS.

The safflower is washed in water until the yellow coloring matter is removed; the earthy matter is then dissolved out by a weak solution of carbonate of soda; the coloring is then precipitated into the saucers by the addition of sulphuric acid to the solution.

Cotton wool and crape being colored in the same way is used for the same purpose, the former being sold as Spanish wool, the latter as *crépon rouge*.—*Annals of Pharmacy*.

[Concluded.]

## Philadelphia College of Pharmacy.

At the Annual Commencement of the Philadelphia College of Pharmacy, held on Thursday evening, March 20th, at 8 o'clock, in the Musical Fund Hall, the degree of Graduate in Pharmacy was conferred, on behalf of the Board of Trustees by its Presiding Officer, HENRY C. BLAIR, Esq., on the following gentlemen.

### Graduating Class.

- ✓ Baues, John M.
- ✓ Battery, Robert
- ✓ Beam, Isaac R.
- ✓ Biddle, John W.
- ✓ Chenoweth, John T.
- ✓ Cummings, Wm. Trevette
- ✓ Dickson, John M.
- ✓ Dilks, Theodore
- ✓ Evans, William Jr.
- ✓ Gerhart, Herman
- ✓ Guthrie, Joseph T.
- ✓ Harte, James H.
- ✓ Higbee, Hugh H.
- ✓ Kearney, Wm. H. L.
- ✓ Kendall, John H.
- ✓ McBride, James
- ✓ Pancoast, Dillwyn P.
- ✓ Paynter, Woodman S.
- ✓ Perrot, E. Raphael
- ✓ Pratt, Wm. H.
- ✓ Scattergood, George J.
- ✓ Shick, Andrew J.
- ✓ Siddall, Francis H.
- ✓ Stanhope, W. Bellingham
- ✓ Thompson, Wm.
- ✓ Warner, Wm. R.
- ✓ Weaver, Thomas
- ✓ Wilson, Adam H.

Cuba.  
Geo.  
Philadelphia.  
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Ohio.  
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Ireland.  
N. J.  
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N. J.  
Philadelphia.  
Paris.  
Connecticut.  
Philadelphia.  
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Delaware.  
Philadelphia.  
Md.  
Philadelphia.  
"

### Subject of Thesis.

Relative strength of Tincture of Opium.  
Gossypium Herbaceum.  
Capsicum Annuum.  
Apocynum Androsæmifolium.  
Cimicifuga Racemosa.  
Cuminum Cuminum.  
Euphorbia Hypericifolia.  
Chimaphila Umbellata.  
Acorus Calamus.  
Ergota.  
"  
Sabbatia Angularis.  
Euphorbia Ipecacuanha.  
Saponaria Officinalis.  
Eupatorium Perfoliatum.  
Cornus Florida.  
"  
Aselepias Tuberosa.  
Hex Opæa.  
Aralia Nudicaulis.  
Triosteum Perfoliatum.  
Xanthoxylum Fraxineum.  
Castor Oil Beans.  
Extractum Panacis Quinquæfolium.  
Coptis Trifolia.  
"  
Gillenia Trifoliata.  
Dorstenia Contrayerva.  
Cantharis Vittata & Mylabris Cichorii.  
Helianthemum Canadense.  
Albumen.

After which the Valedictory Address was delivered by Prof. ROBERT BRIDGES.

## NOTICE

*To the Pharmacutists and Druggists of the United States.*

### AMERICAN PHARMACEUTICAL ASSOCIATION.

The third Article, 1st Section of the Constitution, requires the President, at least three months previous to the annual meeting, to publish a call in such Journals as he may select, stating therein the object of the Association and the conditions of membership. In compliance with this duty, you are hereby notified that the next Annual Meeting of the Association will convene in the city of Baltimore on the second Tuesday, (the 9th), of September, at 3 o'clock P. M.

The objects of the Association are to deliberate on the condition of our

profession, the advancement of pharmaceutical knowledge, and the elevation of the professional character of Druggists throughout the United States. The following extracts from the Constitution exhibit the Conditions of Membership.

*Conditions of Membership.*

SECTION 1. Every apothecary and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, who, after duly considering the object of this Association, and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

SECTION 2. The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said committee. If after investigating his claims they shall approve his election, they shall at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot. Should an application occur in the recess, the members of the committee may give the approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

SECTION 4. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution. Members shall be entitled, on the payment of five dollars, to receive a certificate of membership signed by the President, one Vice President and the Secretary, covenanting in writing to return the same to the proper officers on relinquishing their connection with the Association.

SECTION 5. Every local Pharmaceutical Association shall be entitled to five delegates.

JOHN MEAKIM, President.

*New York, April, 1856.*

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## Minutes of the College.

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At the annual meeting of the Philadelphia College of Pharmacy held at the College Hall, 3rd mo. 31, 1856. CHARLES ELLIS, President, in the chair.

The Minutes of the College and of the Board of Trustees for the last six months were read.

From the latter it appears that Andrew W. Gayley has been duly elected a resident member.

There have been one-hundred and twelve matriculants in the School of Pharmacy during the session just closed, which is the largest class yet convened in the College. Of this number, twenty-eight having complied with the requisites of graduation, were at the recent public commencement, declared Graduates in Pharmacy. (See page 274.)

The Secretary read a letter from Peter Williamson, accepting the offer of the College in relation to his membership, and tendering his thanks for the privileges conferred.

The revised Laws of the College, as agreed upon at the late adjourned meeting, were now again read and fully considered; after some verbal alterations they were by vote unanimously adopted. (See page 280.)

The Committee appointed at the last meeting to propose amendments and prepare the Laws for publication, were on motion continued to publish in pamphlet form, the Charter, Laws, Code of Ethics, list of members and graduates, and such information relative to the College and School as they may deem advisable.

The Committee on Sinking Fund reported as follows:

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| "That since the last annual meeting of the College, they have received, |         |
| From Proceeds of Patent Medicine Directions sold,                       | \$70.00 |
| And from a member, a donation to the fund                               | 5.00    |
|                                                                         | <hr/>   |
|                                                                         | \$75.00 |

And have paid for two shares of stock at par \$200.

The debt of the College in 1851, when your Committee commenced its labors, was \$7800.

We have now the pleasure of reporting that the whole amount still due is only \$200.

|                                                          |          |
|----------------------------------------------------------|----------|
| There is now in the hands of the Committee               | \$90.00  |
| And temporarily loaned to the College to pay ground rent | 100.00   |
|                                                          | <hr/>    |
|                                                          | \$190.00 |

If the College conclude to keep up the stock of P. M. Directions, this amount will probably be wanted this spring, to print a new edition.

SAMUEL F. TROTH,  
EDWARD PARRISH,  
AMBROSE SMITH,

*Committee on the Sinking Fund.*

The report was accepted, and the Committee encouraged to continue the publication of the Patent Medicine directions.

The report of the Committee on Labels was read and accepted. It informed that the new edition of bronzed labels had been issued, and the necessary steps taken to provide for meeting the heavy expense of publication.

The following report from the Publication Committee was read.

"The undersigned respectfully report that the 'Journal' has been regularly issued since their last communication to the College in March, 1855. So far as they have been able to learn, the subscribers are satisfied with its conduction. The present number of subscribers, including those members who receive it gratuitously, is about eight hundred, of these forty-three are new subscribers since last report.

The advertising sheet connected with the Journal has been more encouraged during the past year than before, and is fair to be a useful medium.

The statement of the Treasurer annexed hereunto will exhibit the state of the finances of the Publishing Committee; all which is submitted by

CHARLES ELLIS,  
R. BRIDGES,  
A. B. TAYLOR,  
EDWARD PARRISH,  
W. PROCTOR, JR.

*Publishing Committee.*

This Report was accepted, and the Committee encouraged to expend the profits of the Journal in editing, improving, and illustrating it.

The Committee on notices of deceased members produced an essay upon the life and character of the late Charles Schaffer, which was directed to be recorded and published in connection with the Minutes. (See below.)

The annual election for officers, resulted in the choice of the following:

*President.*—CHARLES ELLIS.

*1st Vice President.*—Samuel F. Troth.

*2d Vice President.*—Dillwyn Parrish.

*Recording Secretary.*—Edward Parrish.

*Corresponding Secretary.*—William Procter, Jr.

*Treasurer.*—Ambrose Smith.

*Trustees.*—John H. Eeky, Dr. R. Bridges, D. S. Jones, J. C. Savery, T. S. Weigand, Saml. N. James, H. M. Troth, and S. S. Bunting.

*Committee on Sinking Fund.*—Saml. F. Troth, E. Parrish, Ambrose Smith.

*Publication Committee.*—Charles Ellis, Dr. R. Bridges, E. Parrish, A. B. Taylor, and W. Procter, Jr.

*Delegates to the American Pharmaceutical Association.*—Charles Ellis, Henry C. Blair, W. Procter, Jr., A. B. Taylor, and S. S. Garrigues.

On motion the College adjourned. EDWARD PARRISH, *Secretary*.

### OBITUARY NOTICE OF CHARLES SCHAFFER.

CHARLES SCHAFFER was born in the city of Philadelphia in 1803, and was regularly educated to the drug business by the late Thomas Cave, a well known and respectable druggist with whom, in the year 1829, he became a partner under the name of Cave & Schaffer. This connection lasted till the death of Thomas Cave, in 1845, when he continued the business alone; until, in 1850, he associated with him his brother, Jos. L. Schaffer, in the firm of C. & J. L. Schaffer. Few drug houses in this city have enjoyed a larger share of the confidence of southern and western merchants than these.

The business career of Mr. Schaffer was marked by enterprise and public spirit, which led him to aid the various public improvements projected by our merchants for the development of the business facilities of our city.

He was connected with this College from an early period in its history till the close of his life, contributing his means to the advancement and elevation of the profession, to which he owed his success in life.

He was one of the founders and a trustee of the Fire Association of Philadelphia.

He gave a large share of his time to the interest of the St. John's Lutheran Church, of which he was a member, and for years was honored with some of its most important trusts.

In illustration of his character we quote the language of one whose pursuits made him intimately acquainted with the subject of our notice:

"Mr. Schaffer was truly an excellent man, intelligent, industrious, persevering, and honorable. During a quarter of a century of constant busi-

ness intercourse with him, I have yet to discover the first transaction that ought to cause the slightest tinge of shame.

Mr. Schaffer's manners were polite, conciliating, and winning, without affectation. He was equally prompt, decided and energetic, without the shadow of bluntness. Among his acquaintance he was esteemed a gentleman in its largest sense. With these qualifications and excellent character he was prosperous in business; the success of competitors excited in him no envy, his motto was 'live and let live.' He was eminently generous, and of him it may be said with truth, 'large was his bounty, and his soul sincere.'"

This estimable man was called away from the scene of his active pursuits in the prime of life. He died in the 52d year of his age, leaving to surviving relatives and friends the rich legacy of a high and honorable example, with the consoling belief that he has exchanged mortality for an immortality of bliss.

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## CHARTER AND LAWS

### OF THE

# Philadelphia College of Pharmacy.

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### An Act to Incorporate the Philadelphia College of Pharmacy.

WHEREAS, to dispense and prepare drugs and medicines for the use of the sick, requires knowledge and skill of a peculiar kind, an ignorance of which opens the door to numerous abuses and evils, and is pregnant with serious consequences to health and life; and it being the duty of every good government to protect, as far as in it lies, its citizens from those ills and dangers to which they become exposed in the multiplied relations of society, by promoting and encouraging wholesome institutions and regulations, calculated to advance the well-being, security and interests of the community; and it being represented to the Legislature, that an institution has been established in the city of Philadelphia, called "The Philadelphia College of Apothecaries," for the purpose of cultivating, improving, and making known a knowledge of Pharmacy, its collateral branches of science, and the best modes of preparing medicines and their compounds, and of giving instruction in the same by public lectures:

Now, that the purposes thereof may be the better carried into effect:

SECT. 1. Be it enacted, by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in general assembly met, and it is hereby enacted by authority of the same, That all such persons as now are members of the Philadelphia College of Apothecaries, or may hereafter become members of the same, be, and they are hereby made and constituted a corporation and body politic, in law and in fact, to have continuance forever, by the name, style, and title of the PHILADELPHIA COLLEGE OF PHARMACY, with power to make one public and common seal, and also one private



seal to use in their affairs, and the same or either of them to change at pleasure; to make contracts relative to said institution, to sue and be sued, and by that name and style to be capable, in law, of purchasing, taking, holding, and conveying any estate, real or personal, for the use of said corporation: Provided, that the annual income of such estate shall not exceed in value five thousand dollars, nor be applied to any other purposes than those for which this corporation is formed.

SECT. 2. And be it further enacted, by the authority aforesaid, That the said College may establish By Laws and Rules for its government and regulation, and for the preservation and application of the funds thereof, not repugnant to the Constitution and Laws of the United States or of this Commonwealth, and shall have power to erect an edifice for their accommodation, and to constitute a faculty or learned body, to consist of such head or heads, and such a number of professors in pharmacy, materia medica, chemistry, and the collateral sciences, as they may judge necessary and proper, and to do everything needful and necessary to the establishment of said College and Faculty.

SECT. 3. And be it further enacted, by the authority aforesaid, That the officers of said College shall be a President and two Vice Presidents, a Secretary and Treasurer, whose respective duties may be assigned by the By-Laws, and who shall be elected at the stated meeting of the College, held in the month of March in each year, and any vacancy that may occur may be supplied by a special election; there shall also be elected a Board of Trustees consisting of sixteen members, and the officers of the College shall also be ex-officio members of the Board of Trustees; one half of the said Trustees shall be chosen at the stated meeting in March, and the other half at the stated meeting in September; and the said Board of Trustees, nine of whom shall constitute a quorum, shall conduct the ordinary affairs of the College, make such rules and regulations, and do all other things necessary for the government and support of the School of Pharmacy, as they may deem fit and proper, and perform such duties as are or may be from time to time committed to them by the said College; the acts of the Board of Trustees, however, to be subject to the revision of the College at each stated meeting,

SECT. 4. And be it further enacted, by the authority aforesaid, That if the annual and semi-annual elections for officers of said College, and members of the Board of Trustees, shall not be held on the stated days, the said corporation shall not be thereby dissolved, but the officers and trustees shall continue in office until a new election.

JOSEPH LAWRENCE,

*Speaker of the House of Representatives.*

WILLIAM MARKS, JUN.,

*Speaker of the Senate.*

Approved March 30, 1822,

JOSEPH HEISTER.

## Laws of the Philadelphia College of Pharmacy, as Revised in 1856.

### LAW I.—*Of the President and Vice President.*

*Sect. 1.* The President, or, in his absence, one of the Vice Presidents, shall preside and maintain order at the meetings of the College.

*Sect. 2.* He shall, at the request of any three members, specifying the object in view, call a special meeting of the College.

*Sect. 3.* He shall nominate all committees, unless a ballot be required by the members, or provided for by the laws; and shall sign all the diplomas and certificates of the College.

### LAW II.—*Of the Secretary.*

*Sect. 1.* The Secretary shall keep fair and correct minutes of the proceedings of the College and a list or roll of members.

*Sect. 2.* He shall issue the notices for the meetings at least one day previous to the time, and furnish the chairmen of all committees with a copy of the minute of their appointment.

*Sect. 3.* He shall also compile the minutes for publication in the Journal, and by his signature shall attest the certificates of membership and diplomas.

### LAW III.—*Of the Corresponding Secretary.*

The Corresponding Secretary shall conduct the correspondence of the College with associate and honorary members, and scientific individuals and societies. It shall be his duty to reply to all foreign communications addressed to or regarding the College. He shall first submit all his proceedings to the President for his approval, and their record shall be read at each stated meeting of the College.

### LAW IV.—*Of the Treasurer.*

*Sect. 1.* The Treasurer shall receive and take charge of the funds of the College, giving bond and security to the President, if required, for the faithful performance of this trust. He shall also hold and issue the certificates of membership and diplomas; shall have the custody of the seal, and affix the same under direction of the College or Board of Trustees.

*Sect. 2.* He shall pay no monies unless on an order of the President, or the Chairman of the Board of Trustees, countersigned by the respective Secretaries of the College or Board, as the case may be.

*Sect. 3.* He shall present annually to the Board of Trustees, at the stated meeting in February, a statement of his accounts.

### LAW V.—*Of the Members.*

*Sect. 1.* The members of the College shall consist of resident, associate, and honorary members.

*Sect. 2.* Any graduate in Pharmacy, conforming in his professional conduct to the code of ethics adopted by this College, may be elected a resident member by the Board of Trustees. Three negative votes shall defeat his election.

Any applicant for resident membership, conforming to the Code of Ethics adopted by this College, who has served a regular apprenticeship to the drug and apothecary business, but is not a graduate in Pharmacy, may be examined by a Committee of Examination, to be appointed annually by the Board of Trustees, and if his examination is satisfactory, he shall in like manner be eligible to election by the Board.

Any druggist or apothecary, not a graduate in Pharmacy, but who has been established in business for at least six years, and conforms to the Code of Ethics of this College, shall be eligible for resident membership—provided he is recommended by the Board of Trustees, to a stated meeting of the College; three negative votes to defeat such recommendation; and, on ballot in the College, not more than three votes are cast against him.

*Sect. 3.* Resident members shall pay an installation fee of five dollars, and five dollars annually thereafter, in the month of December of each year. But any resident member elected after the 1st day of March in any year, shall not be obliged to pay the annual contribution of that year.

Resident members shall be entitled to receive the Journal free of charge, unless in arrears, in which case the Treasurer shall notify the Publication Committee to discontinue it until said arrearages are paid.

*Sect. 4.* Druggists and Pharmacutists residing in any part of the United States, may be elected, under the same restrictions as prescribed in the case of resident members, associate members of the College—each person so elected to pay a contribution of twenty-five dollars, in lieu of all others contributions.

*Sect. 5.* All such persons as, from their knowledge of Materia Medica, Pharmacy, and their collateral branches of science, shall, in the opinion of the College, merit that distinction, may, on the recommendation of four members, be proposed as candidates for honorary membership at one stated meeting of the College, and may be ballotted for at the next stated meeting; three-fourths of the votes given shall be necessary to an election.

*Sect. 6.* Associate and honorary members shall have the same privileges as resident members in regard to the use of the library and cabinet, and attending the lectures and meetings of the College, but they shall have no right to vote or hold any office in the institution.

*Sect. 7.* No resignation shall be received from any member of the College, unless accompanied by a voucher from the Treasurer that his certificate of membership has been returned or destroyed, and all arrearages paid. The College may, however, by vote, continue the certificate to one who may have resigned his membership.

*Sect. 8.* Any member of the College neglecting the payment of his contributions for two years after they are due, may be expelled the College by a vote of two-thirds of the members present.

*Sect. 9.* Any person elected a member of the College and refusing to pay his initiation fee, and to sign the Constitution, for six months after being informed of his election, shall forfeit his right of membership.

*Sect. 10.* No member of the College shall receive an apprentice for a less term than four years; and it shall be rendered obligatory on such apprentice to attend two courses of the different lectures of the institution.

*Sect. 11.* Every member of the College shall, on paying one dollar, be entitled to a certificate of membership, signed by the President and Vice Presidents, attested by the Secretary, and sealed with the seal of the College; such member covenanting in writing to return said certificate to the College on ceasing to be a member, from any cause whatever. The publication of the certificate of membership, as a business advertisement, is deemed inconsistent with the spirit of the Code of Ethics.

#### LAW VI.—*Of the Trustees.*

*Sect. 1.* The Board of Trustees shall meet once a month, or oftener, if necessary, by adjournments, or on the call of their Chairman; and nine members shall constitute a quorum for the transaction of business.

*Sect. 2.* The Board of Trustees shall control and regulate the School of Pharmacy; shall appoint Professors, as vacancies may occur, or as they may deem expedient, to lecture on Materia Medica, Chemistry, theory and practice of Pharmacy, and other branches of science.

They shall appoint a Committee of Examination, who, in conjunction with the Professors in the School of Pharmacy, shall examine and determine the fitness of candidates for the degree, and may, by vote, confer the degree of Graduate in Pharmacy upon such as are recommended as suitable by said Committee. They shall be entrusted with the election of members, as specified in Law V.

They shall appoint committees to have the oversight of the library, the cabinet, herbarium, and the apparatus of the College; and may, from time to time, appropriate funds of the College to the increase of these, for the benefit of the members and students.

They shall have the care and oversight of the College, keeping the hall in repair, and renting such parts as may not be in use for the purposes of the College.

The minutes of the Board of Trustees shall be read at the meetings of the College for approval or dissent.

#### LAW VII.—*Of the Meetings for Business.*

*Sect. 1.* The stated meetings of the College, for the transaction of business, shall be held on the last Monday in March and September.

*Sect. 2.* Eleven members shall constitute a quorum.

*Sect. 3.* As soon as eleven members shall appear, at or after the appointed time of meeting, the President, or, in his absence, one of the Vice Presidents, or, in their absence, a Chairman pro tempore, shall take the chair and call the members to order.

*Sect. 4.* After the meeting has been organized, no member shall leave the room without permission from the presiding officer.

*Sect. 5.* At stated or adjourned meetings business shall be proceeded with in the following order, viz:

1. The Secretary shall call the roll and note absentees.
2. Minutes of the preceding meeting read, corrected, if necessary, and adopted.
3. The minutes of the Board of Trustees, for the preceding meeting or meetings, and such reports and business as they may present.
4. Incidental business.

*Sect. 6.* At a special meeting, after the minutes of the preceding meeting have been read, the meeting shall immediately proceed to the consideration of the business for which it was specially convened, and no other business shall be brought before the College at such special meeting.

*Sect. 7.* The Chair shall decide upon questions of order: from which decisions, however, an appeal to the meeting may be had, if required by by two members, and the meeting shall thereupon decide without debate.

*Sect. 8.* No motion shall be received unless seconded, nor until the mover, if required by the President, Chairman, or a member, shall have committed it to writing.

*Sect. 9.* Every member, when speaking, shall address the Chair; and when a question is before the meeting, no motion shall be received, unless to amend, divide, commit, or postpone, or to adjourn; and a motion to adjourn shall always be decided without debate.

*Sect. 10.* On the call of any member the yeas and nays shall be ordered; when the question is decided by yeas and nays, each member present shall vote, and the names and manner of voting shall be entered upon the minutes.

#### LAW VIII.—*Of the Pharmaceutical Meetings.*

*Sect. 1.* The Pharmaceutical meetings of the College, which shall be exclusively for scientific purposes, shall be held on the first Monday in every month, from October to March, both inclusive, or at such time as said meetings may determine.

*Sect. 2.* Five members shall constitute a quorum.

*Sect. 3.* As soon after the hour appointed as five members shall appear, the President, or, in his absence, one of the Vice Presidents, or, in his absence, a Chairman pro tempore, shall take the chair and call the members to order.

*Sect. 4.* A Register shall be elected annually, at the meeting in October, to issue the notices, prepare business, and record the proceedings of the Pharmaceutical meetings, and to make selections therefrom for publication in the Journal.

*Sect. 5.* The order of proceedings at these meetings shall be as follows:

1. Minutes of the preceding meeting read, corrected, if necessary, and adopted.

2. Strangers introduced.
3. Donations to library or cabinet received.
4. Reports of Committees.
5. Written communications.
6. Verbal communications, miscellaneous business, and conversation.

*Sect. 6.* Members may introduce to these meetings graduates and students of the College and other persons having an interest in science generally, who, when introduced, shall be entitled to participate in the scientific discussions.

#### LAW IX.—*Of the Journal.*

*Sect. 1.* A Journal of such transactions of the College as may be ordered for publication, of original essays and of selections from scientific books, shall be published bi-monthly.

*Sect. 2.* The Journal shall be entitled "The American Journal of Pharmacy;" each number shall contain at least ninety-six pages, and six numbers shall form a volume.

*Sect. 3.* A standing committee of five members shall be elected annually, at the stated meeting in March, who shall be called the Publication Committee. They shall have power to appoint an Editor, affix his salary; and shall have charge of printing and publishing the Journal.

*Sect. 4.* All original communications, read at the Pharmaceutical meetings, for the Journal, shall be referred to this Committee, who shall examine and publish them at their discretion.

*Sect. 5.* The Publication Committee shall affix the price, subject to the approval of the College, and collect the subscription money for the Journal; they shall keep a correct account of their receipts and expenditures, and of the profits of publication; and shall make an annual report thereof, at the stated meeting in March.

*Sect. 6.* The College is not responsible for the opinions and investigations contained in the communications published in the Journal.

#### LAW X.—*Of Deceased Members.*

There shall be a Committee of three appointed at the stated meeting in September, whose duty it shall be to report annually the deaths of members of the College, with such biographical notices as may be appropriate.

#### LAW XI.

No amendment or alteration of these Rules shall be made unless proposed to the College by two members at one stated meeting, considered at the next, and adopted by two-thirds of the members present.

## Editorial Department.

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REORGANIZATION OF THE MARYLAND COLLEGE OF PHARMACY.—From the *Baltimore American* of Feb. 29th we learn that “The Board of Trustees of the Maryland College of Pharmacy held a meeting on Monday the 25th of April, and effected its re-organization on the basis of the charter granted by act of the Legislature, Jan. 27th, 1841; at the same meeting a number of new members were elected. At a meeting of the College held on Wednesday evening, (27th Feb.,) the following gentlemen handed in their resignations as members of the Board, which were accepted, viz: George W. Andrews, Israel J. Grahame, J. V. D. Stewart, and John W. Barry. An election for officers was then held, which resulted as follows:—*President*—George W. Andrews. *Vice Presidents*—Israel J. Grahame and John W. Barry. *Secretary*—William S. Thompson. *Treasurer*—J. B. Baxley. *Board of Examiners*—Alpheus P. Sharp, J. Faris Moore, and Joseph Roberts. The Officers of the College compose the Board of Trustees ex officio.

A correspondent informs us that the meetings since the re-organization have been very spirited, and indicate that the movement among our Baltimore brethren is destined to be productive of good results. At the last meeting the subject of a certificate of membership was brought forward, and claimed much attention, and a Code of Ethics was, after full discussion, also adopted. We have not yet received the printed laws and proceedings, but will again recur to this subject. We understand that our Baltimore friends are pleased with the adoption of Baltimore as the next place of meeting of the Association, and we believe that their usual warm feeling will manifest itself on that occasion in promoting the objects of the meeting.

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THE APOTHECARIES' ASSOCIATION OF THE DISTRICT OF COLUMBIA.—The work of pharmaceutical organization among the larger communities of the United States is slowly but surely progressing. Among the recent movements, none has been more successful than that at Washington, as will be manifest from the following communication:

WASHINGTON, (D. C.) 9th April. 1856.

SIR,—At the first annual meeting of the “Apothecaries Association of the District of Columbia,” held on the 2d inst., on motion of the President, the Corresponding Secretary was instructed to notify you of our organization under the above named title, and in compliance therewith, I have the honor to address you. Aware that the Apothecaries of Richmond, Va. and Baltimore, Md.,\* had recently failed in an effort to organize for similar pur-

\* This does not refer to the recent successful re-organization of the Maryland College, noticed above. EDITOR.

poses, and having made an abortive attempt some years ago ourselves many were naturally dubious at the onset, of harmony and ultimate success. It gives me pleasure, however, that more unity of action and evident desire for the progress of science, and for the increased utility and respectability of its members, could not be manifested than in the meetings of the Association, from its first, on the 22d February, responsive to a call through the public journals, convened at the Washington Infirmary and representing twenty-one establishments, up to the last, on the 2d inst., when with twenty-eight active and seven honorary members, we became fully organized by the adoption of a Constitution, a Code of Ethics, and by the election of officers. At the latter meeting a Committee was appointed to draft a charter to be presented for the action of the Association at a special meeting on the 16th inst., and then to Congress. A bill has also been prepared and adopted for the action of the City Councils with features intended to be protective in the interim, this bill for municipal action would have been unnecessary, but that there is at present a bill before our Councils, "To regulate the sale of Poisons, &c.," containing clauses objectionable to the Apothecaries, and thus the presentation of a substitute was deemed necessary. To favorable action in both these cases we look forward with hope, and confident of your sympathies in all our acts,

I have the honor to be respectfully

F. S. WALSH, Corresponding Secretary.

Wm. Procter, Jr., Esq., Ed. Am. Journal of Pharmacy.

In answering this letter, we requested further information regarding the intentions of the "Association," and were informed, that whilst at present their principal aim has reference to the increase of professional competency of the members, the ultimate design is to include within the scope of the Association a School of Pharmacy. The following preamble to the Constitution is extracted from a pamphlet forwarded by Mr. Walsh, embodying that document, the code of ethics and a list of the members.

"Whereas, the time has arrived when an obvious necessity exists for a more perfect union and amity between the Apothecaries of the District of Columbia; and, whereas, a mutual protection of our interests and the elevation of the professional standing of the Pharmaceutist demand these, we therefore, the Apothecaries and Druggists of this District here assembled, (deeming it a necessary step to accomplish these objects,) do hereby join, in one bond of union, and constitute ourselves into a permanent Association to meet at such time and place as may hereafter be determined on; and to adopt for our government the following Constitution and Code of Ethics, for the observance and maintenance of which, we pledge ourselves one to the other."

In glancing over the pamphlet we observe that the officers of the College are VALENTINE HARBAUGH, *President*; John L. Kidwell, *1st Vice President*; Joseph W. Nairn, *2d Vice President*; William H. Gilman, *Recording Secretary*; Francis S. Walsh, *Corresponding Secretary*; Charles Stott, *Treasurer*; and an *Executive Committee* consisting of Joseph Walsh, Joseph B. Moore, Dunbar S. Tyson, John W. Nairn, and Daniel B. Clarke.

The following is the 1st section of article 3d of the Constitution, viz.

"Every apothecary and druggist of good moral and professional standing, and who shall have been actively engaged for the term of four years, either as principal or clerk, who, after duly considering the objects of this Asso-



ciation, the obligations of its Constitution and Code of Ethics, is willing to subscribe to them, is eligible to membership."

There are four stated meetings of the Association; on the 1st Wednesday of April, July, October and January of each year; the April meeting being considered the annual meeting. Provision is made at these meetings for the reading of scientific essays or other papers on professional subjects, after the other business of the meetings is transacted.

The CODE OF ETHICS adopted by the "Association" is an excellent document, and is clear and explicit in reference to quackery, the Pharmacopœia, the mutual relations of apothecaries, and of these with physicians, and in relation to poisons.

In conclusion, we congratulate our friends of the District, on the successful inauguration of the Association, and wish them a bright future.

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PRIZES OF THE PHARMACEUTICAL SOCIETY.—The Council of the Pharmaceutical Society of Great Britain have recently adopted the plan of offering annual prizes as an encouragement to the pharmacutists of that country to cultivate the scientific department of their business. The prize is in each instance a silver medal, two grades of which are used: The "Council Medal," and the "Pereira Medal." The first prize offered is for the best essay "On the preparation of Cerates, Ointment and Plasters." The points particularly sought to be investigated are pointed out. The competitors must be members or associates of the Pharmaceutical Society, and the essays, with appropriate mottos on the outside of their envelopes, must be presented by 1st of August, 1857.

The Pereira medal is offered for the best essay "On the development and structure of the starch granule, and the means of distinguishing the more important commercial starches." The competitors must also be members or associates of the Society. A silver Council medal is offered for the best herbarium, collected between the 1st day of May, 1856, and the 1st day of August, 1857, and arranged according to the natural system.

This plan of offering prizes as an encouragement to talent and ambition among pharmacutists, has long been practised by the Society of Pharmacy of Paris—who, however, offer the prizes in money. In the British prizes the stimulus will be the honor attached to the attainment of the prize, and we doubt not it will be responded to with spirit.

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IPECACUANHA PLANTS.—Prof. Joseph Carson, of the University of Pennsylvania, has received a box containing several living plants of *Cephaelis Ipecacuanha*, sent from Brazil by a correspondent in Rio. We have seen these plants in the greenhouse of Prof. Wood, and find that three of them are healthy, and likely to thrive. So far as we are aware, these are the first living specimens of the *Cephaelis* that have reached this country.

NOTICE TO THE MEMBERS OF THE PHILADELPHIA COLLEGE OF PHARMACY.—By a recently adopted law of the College, every member who has *paid his annual contribution*, is entitled to receive this *Journal free of charge*. Those members who have complied with this requisition, and have not received the *Journal*, will have it sent to them on exhibiting the Treasurer's receipt at the office of publication, 56 Chestnut Street. Life members are equally entitled to the *Journal*.

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*A chart of Incompatibles and Poisons; embracing the chemical theory of the former: and the antidotes, tests, &c., appropriate to the latter.* By J. W. HOYT, A.M. M.D.

This chart, neatly printed on thick paper, 25×30 inches is intended to present a bird's-eye view of the subjects indicated in the title, applicable to the physician and apothecary for reference on emergency. It will be found useful on many occasions when hints are needed and time is too scarce to look into regular treatises. It is published by E. O. S. Hoyt of Cincinnati.

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*Materia Medica, or Pharmacology and Therapeutics.* By WILLIAM TULLY, M.D., Vol. 1, No. 14. December, 1853.

Dr. Tully is again at work, and after considerable delay the present number, due in 1853, is dated 1855. It is occupied with the narcotics as a class—vegetable and chemical, and offers some views of pharmacodynamics as singular as they are original. We are glad to find Dr. Tully is proceeding with this work. He is an original thinker, but is too much hedged in by peculiar and eccentric ideas, and embodies his views in language so mystified by his ultra technical nomenclature, that their force is lost in the difficulty of attributing the correct meaning as you follow him.

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*Transactions of the State Medical Society [of New York,] transmitted to the Legislature, Feb. 8th, 1856.* Albany, pp. 254.

The above work has been received. The first sixty-three pages are taken up with an eulogium upon the life and character of Dr. Theodorie Romeyn Beck, by Frank H. Hamilton, M. D., President of the Society. The other articles are reports on medical subjects, and the proceedings of the Society. Dr. Beck was born on the 11th of August, 1791, and died on the 19th of March, 1855, aged sixty-four years and a quarter. Dr. Beck was well known as the author of "*Beck's Medical Jurisprudence*," and at the time of his death was a member of many learned societies, both at home and in Europe, where few Americans have been better known.

THE  
AMERICAN JOURNAL OF PHARMACY.

JULY, 1856.

SPIRITUS ÆTHERIS NITRICI.

By EDWARD R. SQUIBB, M. D., U. S. Navy.

Assistant Director U. S. Naval Laboratory.

The U. S. Pharmacopœia formula for this preparation is as follows :—

|                                                 |                        |
|-------------------------------------------------|------------------------|
| “ Take of Nitrate of Potassa, in coarse powder, | two pounds,            |
| Sulphuric acid,                                 | a pound and a half,    |
| Alcohol,                                        | nine pints and a half, |
| Diluted alcohol,                                | a pint,                |
| Carbonate of potassa,                           | an ounce.              |

Mix the nitrate of potassa and alcohol in a large glass retort, and having gradually poured in the acid, digest with a gentle heat for two hours ; then raise the heat and distil a gallon. To the distilled liquor add the diluted alcohol and carbonate of potassa, and again distil a gallon.”

The apparatus necessary to conduct this process properly is as follows : A tubulated retort of a capacity of two gallons. Into the tubulure, through a perforated cork, a tube thermometer should pass, so that the bulb may be near the bottom of the retort. A Liebig's condenser of good size, and a receiving bottle marked at one gallon by slips of paper. The mouth of the bottle should be tied over with a piece of sheet caoutchouc that has been perforated to receive the eduction tube of the condenser. The connections should be made with moistened muslin, covered with sheet caoutchouc.

The mixture is made in the retort in the order of alcohol, potassa salt, and acid, and the whole shaken round. The apparatus is then set up in a steam or water bath, and the materials digested at 100° for two hours, and then heated to active distillation. The greenish yellow mixture commences to boil at 125°, and at 130° full active ebullition and distillation is estab-

lished. From this point the temperature gradually, and toward the last, very slowly rises to  $184^{\circ}$ , when  $5\frac{1}{2}$  or 6 pints of colorless distillate will have passed over. This distillate is free from any perceptible odor of hyponitrous ether, but has throughout a distinct odor of sulphuretted hydrogen. The salt in the retort forms a cake at the bottom, and the liquid boils around and over it without any apparent effect upon it. The distillation then slackens somewhat, but no perceptible reaction will have taken place till 6 pints of colorless and odorless (except for sulphuretted hydrogen) distillate has passed over. An hour or more is thus occupied before the period of reaction arrives. The cake then commences to dissolve and break up, the solution becomes gradually of a deeper yellow tinge, faint yellow vapors appear in the retort, the temperature rises slowly to  $185^{\circ}$  or  $186^{\circ}$ , the distillation increases, and the distillate becomes perceptibly yellow. Coincidentally with these changes, and indicating distinctly the full establishment of etherification, the temperature in the retort commences to fall. When it has fallen one or two degrees the heat should be shut off and the reaction be allowed to go on spontaneously, or with only a very slight heat at most. As the temperature falls, the distillation slackens, till at  $170^{\circ}$  it only comes over by a fast dropping. If the prescribed quantity has not passed over, the heating should then be cautiously resumed, and the remainder driven over at a temperature not exceeding  $180^{\circ}$ .

If, on the contrary, the active heating should have been too long continued, and the reaction becomes too active, so that much gas and uncondensed ether vapor passes over, the heat must be entirely withdrawn and the retort cooled with water, copiously applied. This requires rapid and dexterous manipulation to avoid an undue proportion of aldehyd in the distillate; for, although aldehyd comes over at all stages of the process, it comes much more rapidly as the temperature and activity of the reactions increase. It is then, probably, that it is formed too rapidly to be all of it fixed by the secondary reactions, and thus passes over with the distillate.

It is sometimes difficult to get a gallon of distillate below  $180^{\circ}$ , in which case the thermometer may be made to rise to  $182^{\circ}$  or  $184^{\circ}$ . A temperature of  $186^{\circ}$ , however, can never be exceeded

with safety to the product, and as very little ether is formed at the close of the process, it is better to arrest it an ounce or two short of the prescribed volume, than to risk a higher temperature. If carefully managed, it is easy to control or arrest the process at any stage, by diminishing or stopping off the heat; but if incautiously managed, a new and comparatively uncontrollable reaction occurs, which produces no ether, but aldehyd and hydrocyanic acid vapors in abundance. The operator should therefore be always in readiness to remove the receiving bottle, particularly if using larger quantities of materials than those of the officinal formula. At the end of the process the retort contains 36 f.℥ of residue, in two layers. The upper one, of say 4 to 6 f.℥, is yellow, transparent and oleaginous; the lower is white or opaque from mechanical admixture of an undissolved salt. This residue should be poured at once from the retort, in order to avoid risk of losing the vessel in the attempt to get it out after it solidifies. This residue boils actively long after being poured into a cool vessel, and the vapors given off by it are hurtful.

The retort, condenser, and all the muslin, &c., used about the connections having been thoroughly washed, and the apparatus again set up, the rectification is commenced.

The carbonate of potassa having been put into the receiving bottle at the commencement of the process, and the distillate having been received upon it, the whole is now well shaken up with the palm of the hand, only, over the bottle mouth, and poured into the cleansed retort, and the bottle rinsed in with the diluted alcohol. The bottle is then rinsed clean, tied over as before, and replaced in the apparatus, when the heating is cautiously resumed. At 130° to 133° the liquid will fairly boil, and must be kept from boiling too rapidly for the capacity of the condenser, as it is easy to drive off an important portion of the ether by too rapid heating at first. One fourth of the gallon should pass over before the temperature rises above 176°, and as this portion contains nearly all the ether, the remainder being more easily condensed may be distilled more rapidly.

If the first fourth of this distillate be kept apart and distilled fractionally, it commences to boil at 68 to 72°, boils rapidly and distils fast at 74°, and then steadily and more and more slowly arises to 156°. The receiver is then changed and 8 f.℥ more

distilled over. This is redistilled to 17 f.℥. The first product measures 8 f.℥ received up to 156°, is of a golden yellow color, and has a s. g. of .8914 at 50°. The second product 17 f.℥ is of a paler yellow and has a density of .862 at 50°. The rejected portions still contain some ether, probably 3 f.℥ of the same density as the last product. By a calculation based upon the specific gravities, this would give to the officinal spirit of nitre by this process, a composition of 123 f.℥ alcohol, and 5 f.℥ of pure dry hyponitrous ether, or about 4 per cent. of the ether under the most favorable circumstances.

The sweet spirit of nitre obtained by this process is a volatile, transparent, bright liquid, of a greenish yellow tint—never colorless, and of a fragrant but not pungent odor. It boils at 156° to 158° and has a specific gravity of .840 to .841 at 60° when freshly made. It is perfectly neutral to test paper, and gives a deep straw color with dilute solution of potassa within half an hour.

With good materials and careful manipulation this process yields an excellent medicinal preparation liable only to the objections that it contains too much aldehyd, and is not as uniform in strength, nor quite as strong as desirable. When put up at once in half pint bottles, well filled and well stopped with waxed glass stoppers, and the bottles covered with dark paper, it keeps well. Several bottles of it made in March, 1854, were examined recently in connection with this part of the subject, and were found to have undergone no perceptible change. It is the practice of this laboratory to make this preparation fresh for every vessel of large class that is fitted out in the navy, and the preparation now examined was made for the frigate Columbia, then fitted out as the flag ship of the home squadron, and was returned with the stores of that vessel when she was laid up, after a cruise of nearly two years, principally in the West Indies. As a test of the keeping properties of the preparation when well made, I regard this as conclusive. Another specimen one year and three months old, is in the same good condition.

After having practiced this process bi-monthly or oftener for two years, it was abandoned in search of a better and more convenient one, for the following reasons:—

It is unnecessarily circuitous and complex.

It makes use of a salt that is often difficult to obtain free from chlorides; and that is nearly insoluble in the menstruum used, thus postponing the reactions and rendering them somewhat variable and precarious. The reaction which produces an undue proportion of aldehyd in the distillate, and which probably occurs at temperatures about  $186^{\circ}$  to  $190^{\circ}$  may very well take place in that portion of the materials confined under the cake in contact with the bottom of the retort, for it is not uncommon to see a violent boiling out from under the cake, when the ebullition elsewhere is quietly and steadily going on. There is no way of securing uniformity of temperature and reaction in a retort of boiling liquid when a cake of solid matter lies upon the bottom.

The process distils over from one half to three fourths of the alcohol twice unnecessarily, for the six pints first received in the etherification, and last received in the rectification, are simply alcohol. This unnecessary distillation occupies half the time of the process, and requires a larger apparatus than is commonly possessed by apothecaries.

In making nitric acid, the materials used in this process should yield practically about  $18\frac{1}{2}\bar{5}$  of an acid of 1.41 s. g., and upon this the following process is based; and this process is the best substitute for the officinal one that I have yet tried, and its details and results are based upon an experience of nearly a year and a half:—

|                       |             |                                                              |
|-----------------------|-------------|--------------------------------------------------------------|
| Take of Nitric Acid,  | s. g. 1.408 | 28 f. $\bar{5}$ = 37 $\bar{5}$ = 2lb 8 $\frac{1}{2}$ oz. Av. |
| Alcohol,              | " .835      | 20 pints.                                                    |
| Carbonate of potassa, |             | 2 $\bar{5}$ .                                                |

The apparatus required is the same precisely as that for the U. S. P. process, except that, for double the yield, both the retort and receiver may be of 2 pints less capacity. The receiver should be marked at each pint by a pencil on a slip of paper pasted vertically on the side of the bottle.

One gallon of the alcohol is introduced into the retort, the acid slowly added to it, and heat applied through the intervention of water, or preferably by a steam jet. At  $178^{\circ}$  the yellow mixture begins to boil; and faint yellow vapors appear in the retort as brisk distillation commences at  $184^{\circ}$ , the distillate being slightly yellow and ethereal from the beginning.

As the distillation proceeds, the boiling mixture and the atmosphere within the retort become more yellow till the temperature reaches  $188^{\circ}$ , and three pints have passed over. The temperature then, if watched closely, will be seen to fall from  $\frac{1}{2}^{\circ}$  to  $2^{\circ}$ , according to the amount of heat applied at the time, and coincidently with this, a material increase in the rate of distillation and color of the distillate occurs. This indicates the full establishment of the etherifying reactions, and should be carefully observed and appreciated. As soon as the distillation increases and the temperature begins to fall, the heat should be moderated down, and as soon as the reaction is fully established, the heat should be entirely withdrawn. The thermometer then falls very slowly and steadily to  $170^{\circ}$ , the distillation also decreasing till at  $170^{\circ}$  about  $5\frac{1}{4}$  pints of distillate have passed over. The heating is then cautiously resumed, and the thermometer kept steadily at or about  $176^{\circ}$  till  $6\frac{1}{2}$  pints have passed over, when the process is terminated and the apparatus taken down, thoroughly rinsed out, and set up again.

The carbonate of potassa is added to the distillate and well shaken with it, the bottle being closed only with the hand. The mixture is then poured into the retort, and the rectification commenced, slowly at first, or at least with a speed proportionate to the capacity of the condenser. The mixture boils at about  $80^{\circ}$ , distills rapidly at  $100^{\circ}$ , and 18 f.℥ should pass over before the temperature rises above  $150^{\circ}$ . The heat may then be increased from time to time, and the remainder pushed over rapidly till  $5\frac{1}{2}$  pints have been received. The distillate is then transferred to a larger vessel, alcohol added to it till it measures 17 pints, the whole well shaken, and then put up in half pint bottles, well filled, and well stopped with waxed glass stoppers, and the bottles covered with dark blue paper. The whole process occupies about 4 hours.

The product is neutral, of a clear bright yellow tint, and fragrant odor free from pungency. The s. g. is .841 to .842, it boils at  $156^{\circ}$  to  $157^{\circ}$ , and gives but a pale straw color with dilute solution of potassa within half an hour. It is occasionally so free from aldehyd that several hours is required to develop the color with solution of potassa. The tint is generally seen within an hour by looking through the test tube in the direction of its



long axis. The comparative freedom from aldehyd, for it is never altogether free from it, is an indication of the care and success with which the process has been conducted, and is, too, an indication of the length of time the preparation will keep in dispensing. Put up as above directed, this preparation has kept for one year without the slightest appreciable change. How much longer it will keep, I am not able to say at present.

If, in the rectification of the above product, the distillation be conducted fractionally and the different portions of the distillate examined, they will be found nearly as follows:—

|        |                     |                  |               |        |
|--------|---------------------|------------------|---------------|--------|
| 18 f.℥ | received up to 150° | golden yellow,   | s. g. .900    | at 50° |
| 2½ f.℥ | “ “                 | 160° pale straw, | “ .878        | “ 57°  |
| 6½ f.℥ | “ at 160°           | paler “          | “ .869        | “ 56°  |
| 10 f.℥ | “ up to 176°        | “ “              | not examined. |        |

The last portion, not examined, probably contains 1½ f.℥ of ether, of s. g. .869, at least, in which case a calculation by the specific gravities indicates that this preparation contains very nearly 14 f.℥ of dry hyponitrous ether, s. g. .947, or about 5.1 per cent.

In adopting the proportions of this formula I supposed it would yield a preparation medicinally identical with that of the U. S. P. process, and this supposition, based upon a practical observation in making nitric acid, was strengthened by the physical properties of the resulting spirit of nitre. I have since found, however, as now stated, that the 18½℥ of nitric acid of s. g. 1.408 that the United States Pharmacopœia materials do yield when distilled separately is not utilized in that process, for if the ready made acid in this quantity is substituted for the materials for generating it, the yield of ether is over 1 per cent. more in the preparation. The U. S. P. process should yield a preparation containing 5 per cent. of dry ether, but cannot be made to do so in my hands except by obtaining the nitric acid as a separate operation. Why the acid yields one fourth more ether than I can obtain in using the materials for generating it, I could only attempt to explain upon theoretical grounds, which I do not fully entertain in opposition to the practical experience upon which the Pharmacopœia process is based.

This process of obtaining a dilute hyponitrous ether, and then farther diluting it, is quite applicable to general pharma-

ceutical use, and from the experiments I have made for reducing the scale with this view, I venture to assert that any apothecary who can compound a prescription properly can as easily make this preparation for himself. It is one of those preparations, and the number of such is not few, that is more easily made upon the small scale, simply because the success that attends the process depends mainly upon a temperature, and because this is more easily regulated in small vessels with small quantities of materials to react. It can be made very cheaply too, and with an apparatus so simple, and of so general an adaptability, that a great majority of apothecaries doubtless always possess it.

Having recently bought such an apparatus for making these experiments on the small scale it may be worth while to enumerate it, and mention the cost.

|                                                                                                                                                                        |      |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|
| A tubulated retort 14 to 16 f.℥ capacity,                                                                                                                              | cost | \$0 42 |
| A tubular thermometer,*                                                                                                                                                | "    | 1 75   |
| A piece of thin glass tube, $\frac{1}{2}$ inch internal diameter<br>and three feet long; and two short pieces of<br>small glass tube which may be bent in the<br>lamp, | cost | 0 13   |
| And two feet of small india rubber tubing,                                                                                                                             | "    | 0 25   |
|                                                                                                                                                                        |      | <hr/>  |
|                                                                                                                                                                        |      | \$2 55 |

Of these last materials I made a very good Liebig's condenser with corks, by soldering together two plaster cans for a case. The necessary lamp and stand, vessel for a water bath, and proper supports, are always at hand in some form that may be made available. With such appliances the dispensing apothecary can, and should make this preparation for a length of time proportionate to the care and skill with which he uses them, with great advantage to himself, to the patient and to the physician.

\* These thermometers are imported from Germany. They are by far the most convenient and useful. They consist of an opaque glass scale and capillary tube with black figures, enclosed in a glass tube not much larger than that of a barometer. Being entirely of glass, except the enclosed mercury, they are well adapted to an extended and indiscriminate use.

They may be had of J. F. Luhme & Co., No. 565 Broadway, or of F. Liese, No. 102 John Street, New York, of Mr. A. P. Sharp of Baltimore, and probably also of apparatus dealers generally.

|                            |       |            |
|----------------------------|-------|------------|
| Take of Nitric Acid, s. g. | 1.408 | 2f. 3̄.    |
| (or " " " "                | 1.35  | 2½ f. 3̄)  |
| Alcohol, " "               | .835  | 22½ f. 3̄) |
| (or " " " "                | .838  | 21 f. 3̄)  |
| Carbonate of Potassa,      |       | 25.        |

The apparatus being set up, add the nitric acid slowly to 9 f. 3̄ of the alcohol in the retort, and having the thermometer in place, apply the heat. The mixing of the materials gives them a temperature of 93° to commence with. If the nitric acid used is nearly colorless the mixture will be colorless also till heated to near the boiling point, when it becomes yellow.

It begins to boil at 179° to 181° and boils and distils actively at 184°, yielding a yellow distillate from the first. It occasionally happens that this in common with many other liquids, boils badly, becoming heated far above the boiling point, and only boiling at intervals and by bursts of ebullition. This curious condition of fluids commonly occurs in small round bottomed glass vessels, and may be measurably controlled by having a fragment or two of glass in the retort. These should not be dropped in while the liquid is heated above its boiling point, as they then almost invariably cause it to boil over, but the process should always commence with this simple precaution.

The mixture goes on boiling and distilling steadily at a temperature gradually and slowly rising to 186° or 187° where it becomes stationary till 7 f. 3̄ of distillate has passed over. The heat is then moderated by lowering the lamp till the temperature falls to 176°, and the distillation continued about this point till the distillate amounts to 8 f. 3̄. when the first part of the process is terminated.

During this distillation the temperature is liable to fall suddenly a degree or more, and then slowly rise again, such variations of temperature may be disregarded as long as the rate of distillation continues unchanged; but if coincidently with a fall of temperature the distillation should increase and gases pass over uncondensed, the lamp should be at once removed. The temperature will then continue to fall steadily to 170° while the distillation slackens, when the heating may be cautiously resumed till the prescribed 8 f. 3̄ has been received below 176°

The apparatus is then thoroughly rinsed out, the distillate re-

turned to the retort, the carbonate of potassa added to it, the whole shaken round well without splashing into the retort neck, the apparatus connected, and the warm water of the bath carefully and slowly applied so that the distillation does not exceed the capacity of the condenser. This capacity is easily and nicely determined by watching the drop which always occupies the end of the small eduction tube fitted to the end of the condenser. If the condenser is working below its capacity, bubbles of air will from time to time pass *into* the apparatus, and the delivery will be irregular from this tendency of air to pass in by or through the condensed liquid. If working beyond its capacity the drops will be blown out by escaping vapors. The first part of the rectification should not proceed too slowly, however, for the distillate then, from being nearly pure ether, evaporates rapidly, particularly if received in a large mouthed vessel.

As a guide to the strength of the preparation, it is proper to notice that about 1 f.℥ should pass over before the temperature of the boiling liquid rises above  $150^{\circ}$ , and that by the time the temperature reaches  $176^{\circ}$  3 f.℥ should have been received. This 3 f.℥ of distillate should have a s. g. of .869.

The rectification is carried to 6 f.℥, and this distillate is diluted to  $19\frac{1}{2}$  f.℥ with the remainder of the alcohol, and well shaken. It should then be transferred at once to small bottles well filled and stopped, and covered with dark wrappers.

If the first distillate be rectified fractionally, it will yield as follows:

|       |                     |               |             |                      |
|-------|---------------------|---------------|-------------|----------------------|
| 1 f.℥ | up to $157^{\circ}$ | golden yellow | s. g. .8944 | at $54^{\circ}$      |
| 1 f.℥ | " $173^{\circ}$     | paler         | " "         | .8640 " $60^{\circ}$ |
| 1 f.℥ | " $176^{\circ}$     | paler         | " "         | .8483 " $60^{\circ}$ |

giving a mean s. g. for the first 3 f.℥ of .869. The remaining 3 f.℥ is nearly colorless, and almost wholly alcohol.

Assuming that the first 3 f.℥ is a solution of hyponitrous ether in alcohol, it will consist of 7.94 f.℥ of the ether and 16.03 f.℥ of alcohol, and will therefore yield a finished preparation containing 5.1 per cent. of dry hyponitrous ether.

I have found in practice that nitric acid which is sold as "1.42" s. g. commonly has a true s. g. of 1.405 to 1.41, and the commercial acid sold as "1.38" is often as low as 1.35 in reality. So alcohol sold as ".835" is rarely below .836 and

often above .838, whilst I have not yet seen a specimen of "95 per cent" alcohol that was in reality below .8195 to .820 s. g.

If the second set of proportions given in brackets in the formula, be used with these commercial materials that are not weaker than the specific gravities given indicate, the mixture will boil at  $180^{\circ}$  but the boiling point will not rise so high as  $186^{\circ}$  till near the end of the distillation. Then however it is prone to rise higher and to produce more aldehyd in the distillate if not very carefully and slowly conducted. The same quantity 8 f.℥ should be distilled over, and at similar temperatures. In the rectification about 7 f.℥ will pass over below  $150^{\circ}$  to  $156^{\circ}$ , and 3 f.℥ below  $176^{\circ}$ . The rectification should be carried to 5 f.℥ only, and to this should be added 11 f.℥ of alcohol, making 1 pint of finished sweet spirit of nitre.

The s. g. of the 20 f.℥ first received in the rectification is .8732 which yields by calculation 6.94 f.℥ of the ether s. g. .947 and 13.06 f.℥ of alcohol s. g. .838, thus furnishing a product containing 5.2 per cent. of the dry ether, or practically the same with the other materials.

This preparation cannot be distinguished from the other by appearance or sensible properties, is neutral to test paper, but has a very different s. g.—.847 instead of .8415—and is liable to contain more aldehyd. Of its keeping properties I can say nothing, only that I believe that sweet spirit of nitre keeps best when it contains least water; and that much water will cause it to spoil very soon, no matter how carefully it may be kept.

Except that ordinary nitric acid is almost as liable to contain chlorine, as nitrate of potassa is to contain chlorides, the first of these processes on the small scale is nearly unobjectionable in practice, chiefly because the proportions of acid and alcohol are such that etherification occurs near the boiling point of the mixture, and near the boiling point of alcohol, where the temperature is most easily regulated. It avoids the violent reaction and difficult management of the Edinburgh and Dublin processes, and also avoids the loss attending the separation and manipulation of so volatile a liquid as these processes obtain, for as the alcohol distils over with the ether, and as the ether is slowly produced, its volatilization or loss is measurably controlled.

When the alcohol bears a smaller proportion to the acid than

that given, the boiling point of the mixture is higher, and the reactions occurring at a higher temperature produce more aldehyd in the distillate, and are less easily and less economically controlled. When a much larger proportion of alcohol is used, it distils off before the proper reactions take place, the distillation of unchanged alcohol frequently continuing till the proportion is considerably less than that adopted in the formula, and the reaction when it does occur is of course correspondingly more active. The manner in which nitric acid and alcohol are mixed has a most interesting and important bearing upon the character of the reactions, as well as upon the period and rate at which these reactions occur. Thus the acid, if new and colorless, may be so slowly and carefully mixed with the alcohol that in the proportions given in the London officinal formula the whole of the prescribed distillate may be drawn over before any appreciable reaction occurs. In practice, upon a scale of  $2\frac{1}{2}$  gallons of materials, this has twice occurred to me, without any particular care, or premeditated slowness in mixing. On the other hand if alcohol is slowly poured into nitric acid, a most violent reaction occurs before the proportions become equal, and this violent reaction continues long after the proportions pass the limit of 5 to 1, or until the cold alcohol quenches the reaction altogether. Such a mixture has the sensible properties of spirit of nitre. At some period, and in some portions of all mixtures as ordinarily made, some of these conditions of concentration are liable to occur, and thence to act as a starting point from whence general reaction may commence earlier or later, as the case may be. Hence the utility of a proper proportion, and of a temperature regulated at the lowest point of equable reaction, as the best, the safest, and the most economical means of controlling such variations in the reactions. The means of controlling within narrow practical limits, the strength of the preparation by the proposed formula is very satisfactory, and not difficult to accomplish. It consists simply in taking the specific gravity of that portion of the distillate in the rectification, which comes over below the boiling point of alcohol, which portion will contain nearly all the ether, and may for practical purposes be considered as a solution of hyponitrous ether in a small proportion of alcohol. The operator will then have three specific gravities, namely of the

mixture and its two elements (the small portion of water and aldehyd, and degrees of temperature within five or six being disregarded,) from which to calculate the proportion of each element, by the following rule :

“Take the difference of every pair of the three specific gravities, viz., of the compound and each ingredient; and multiply the difference of every two by the third. Then as the greatest product is to the whole weight” or volume “of the compound, so is each of the other products to the weight” or volume “of the two ingredients.” The specific gravity of the mixture being above or below the mean of the two ingredients, indicates that the largest obtained proportional belongs on the side of the greater or less specific gravity.

The descriptions of sweet spirit of nitre as commonly met with are faulty. It is described by our Pharmacopœia in common with others as “colorless.” I have never seen it colorless when of fair quality, no matter by what process it may have been made. On the other hand, when of full officinal (U. S. P.) strength, it has a very decided greenish yellow tint. That it may be made colorless by repeated rectification of the ether, I have no doubt; neither of the formula, however, accomplish this. It is said that it “slightly reddens litmus,” but when freshly made, or when well kept, it does not at all redden ordinary litmus paper until a few moment’s exposure to the air, on the paper, oxidizes the aldehyd or binoxide of nitrogen which it contains, in small proportion. This change occurs the more quickly, and is the more marked, as the preparation contains more water. The strictly officinal preparation begins to boil at  $156^{\circ}$  to  $157^{\circ}$  instead of “ $160^{\circ}$ .” It is described as having a s. g. of .834, a density below that of the alcohol used, whilst the ether dissolved in the alcohol has a density of .947. In practice the s. g. varies from .840 to .841 when freshly made. It, however, loses in s. g. and in color, by age, without giving evidence of any other change. Several specimens put up at .840 to .842 were examined at periods varying between two years and five months, were found to have s. g. of .835 to .838, yet were not deficient in the proportion of ether yielded to fractional distillation.

Tests of character for this preparation are much needed, but it is not easy to find any that are simple and reliable. The least

objectionable method of estimating or comparing the ethereal strength is probably that of fractional distillation. One pint of officinal sweet spirit of nitre distilled from fragments of glass, by a water bath, yields a yellow distillate of one fourth of its bulk, whilst the temperature in the boiling liquid is below  $180^{\circ}$ , and such a distillate contains nearly all the hyponitrous ether of the preparation. This distillate, again distilled in precisely the same way, yields 1 f. 3 of distillate below  $176^{\circ}$ . This last, upon the addition of an equal bulk of water, added in a stream, and without agitation, yields a supernatant ethereal layer of  $2\frac{1}{2}$  f. 3. The preparation by the proposed process yields about 3 f. 3. These results are based upon a number of trials, and are not too high, but will be found to indicate the comparative value very conveniently. Dilute solution of potassa, say equal parts of officinal solution and distilled water, is an excellent test for aldehyd in a spirit that is free from acid, or nearly so, provided time be given for its reaction to develope the color. I have never seen a specimen of good spirit of nitre that would not, in the proportion of equal parts, yield a decided straw yellow tint with this test within twelve hours. A yellow tint is usually perceptible within fifteen minutes, and the color thence grows deeper for twelve hours, when it becomes of a golden or brownish yellow of a deep hue. Where aldehyd is in undue proportion, this change occurs sooner, and becomes ultimately of a brown hue, even within an hour or two. The changes appear to take place more quickly in warm weather, and in a bright light.

The sulphuric acid test is less convenient and less to be relied upon in my hands.

In order to ascertain the relative strength the officinal preparation bears to the commercial article as supplied to apothecaries generally, six samples of sweet spirit of nitre were purchased and examined. Five of these samples were obtained from five of the largest and most respectable wholesale drug establishments in New York city, and one from a large establishment that is considered to be of second rate as to character. As these houses represent the commerce in medicines, under the most favorable circumstances, so the samples obtained from them may be considered as fairly representing the merchantable articles and the manufacturers that supply the demand. The six samples



were sold as the products of three manufactories, two of Philadelphia, and one of New York, two of these manufactories are very extensive, and probably supply a very large proportion of the medicinal preparations that are manufactured in the United States. The third is much smaller, and represents a pretty numerous class of manufacturers of special preparations. Three of the samples are alleged to be from the largest manufacturers, two from the second in extent, and one from the smaller. One of these manufacturers makes and sells five different kinds of Sweet Spirit of Nitre. Only two of these were examined, however, as these only, called "3 F" and "4 F" were met with in casually purchasing the six samples as a fair representation of the article that is now within the reach of general medical practice.

These specimens, then, probably represent the manufacture and the markets of New York and Philadelphia in this preparation. They were carefully examined by fractional distillation as above mentioned, and are placed in comparison with No. 7, which is a strictly official U. S. P. preparation 16 months old.

| No. | Color.     | S. G. | Reaction with Litmus. | Reaction with Sol. Potassa in 15 minutes | Etherial layer separated by water from 1 pint of spirit. | Estimated per centage of dry Ether contained. |        |
|-----|------------|-------|-----------------------|------------------------------------------|----------------------------------------------------------|-----------------------------------------------|--------|
| 1   | Good.      | .839  | Neutral.              | Yellow.                                  | 50 ℥.                                                    | Below 1.7 p.c.                                |        |
| 2   | Pale.      | .840  | "                     | "                                        | 1 f. 5 scant.                                            | " 2. "                                        |        |
| 3   | Good.      | .839  | "                     | "                                        | 1 f. 5                                                   | " 2. "                                        |        |
| 4   | Good.      | .881  | Acid.                 | Colorless                                | 1 f. 5 scant.                                            | " 2. "                                        | "4 F." |
| 5*  | Colorless. | .911  | "                     | Brown.                                   | None.                                                    | " 1. "                                        | "3 F." |
| 6   | Good.      | .851  | Slightly acid.        | Yellow.                                  | 1 f. 5. 35 ℥                                             | 3.16                                          | "      |
| 7   | Good.      | .840  | Neutral.              | "                                        | 2 1 f. 5                                                 | 4.2                                           | "      |

It would appear from this table that a great majority of the physicians, whose patients obtain their Sweet Spirit of Nitre from ordinary sources, are prescribing a preparation that is considerably below half its proper strength; or often but little more than dilute alcohol. It is not surprising that little or no medicinal effect is obtained from such an article; or that when given in the now common doubled dose it produces the almost opposite effect of so much alcohol.

\* This sample was opalescent when purchased, and this "muddiness" was ascribed by the person who dispensed it, to his having "rinsed out the bottle with water" previous to putting it up. In standing twenty-four hours it became clear by depositing a white sediment.

The officinal U. S. P. preparation is at best probably too strong in alcohol for the full medicinal effect of the hyponitrous ether, having probably less ether in it by 1 per cent, than the framers of the Pharmacopœia purposed it should have from the formula.

Hence the physician who predicates any part of the character of his profession upon the diaphoretic, diuretic, or febrifuge effects of this commercial preparation too often brings a discredit upon his science and art, which more justly belong to the preparation he employs. His patient distrusts his skill, and instinctively seeks for better results from some of the various pretended "systems" or quackeries with which he is surrounded.

It is not probable that bad colocynth or bad scammony are ever to be found in "Brandreth's Pills," but I have good reason to believe that the seed from the colocynth of which Brandreth's Pills are made, is separately powdered and sold, and that from such cheap varieties of powdered colocynth much of the extract is made upon which regular practitioners must rely.

In view of such illustrations, is it surprising that charlatanism flourishes, or that medical men are to be found in co-partnership, or in competition with it? The patient often doubts the quality of his physician or of his physician's science, but rarely reflects upon the tendency of commercial competition and a blunted moral perception upon the means on which physicians must rely.

It is said of Sweet Spirit of Nitre, as of Hoffman's anodyne and other preparations, that the commercial article is so very different from that contemplated in the *materia medica*, that it may be well to examine into the expediency of so modifying the Pharmacopœia as to produce the commercial article, because the curative effects or character of the article as a remedial agent must belong to it as found in commerce, rather than as produced by the officinal formula, since by far the greater part used in medicine is obtained through commerce. To all such reasoning and expediency, and to the increasing disposition to subsidize every science and art to the making of money alone, I offer my hearty and unqualified opposition; for it is mainly thus that the physician is losing one by one his valuable curative agents, and acquiring for his profession an uncertainty which does not belong to it, but which engenders a popular distrust as injurious to that profession as it is beneficial to charlatanism.

*U. S. Naval Laboratory, New York, May 1856.*

## ON AMMONIO-FERRIC ALUM.

By WILLIAM HODGSON, JR.

Dr. James Darrach, of this city, requested me to prepare for him some of the "iron alum" mentioned by Dr. Wm. Tyler Smith, of London, in his recent work on "The Pathology and treatment of Leucorrhœa." So far as I am aware, the article mentioned had not been used in medicine in the United States; nor has its mode of preparation been hitherto distinctly stated in any pharmaceutical publication here or abroad. A few remarks on its character were re-published in the American Journal of Pharmacy for 1854, page 159, copied from the London Pharmaceutical Journal, in which, on Dr. W. T. Smith's authority, the "iron alum" is mentioned as "a more powerful astringent than common alum, and not liable to produce the stimulating effects of other salts of iron." But the paper seems to have attracted no attention here, nor are any specific directions therein contained to enable the druggist readily to prepare this so-called alum.

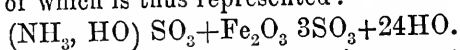
Dr. Smith says of the use of this salt in the above disease:—"In 1852, I began to administer it." \* \* \* \* "I found it remarkably efficacious, and have constantly prescribed it since that time. I certainly do not know of any other internal remedy which at all equals it in leucorrhœa. Since I began to use it, it has been employed by my colleagues, and by other physicians, but sometimes other compounds have been used under the name of iron alum." \* \* \* \* "The genuine iron alum contains no alumina whatever. There are two preparations of iron alum: one of them is a double sulphate of potash and iron, and the other a double sulphate of ammonia and iron." [He might have added a third, with soda in place of potash or ammonia.]

\* \* \* \* "I have prescribed the iron alum with ammonia, (which I now prefer, in most cases, to the similar salt with potash, because of its greater solubility,) in doses of from 3 to 6 grains, in infusion of columba, or in simple water, with some warm tincture, three times a day. It is similar in its action to the sesquichloride of iron, but while it is equal to, or perhaps more effective than this medicine as an astringent, it is less stimulating, more easily assimilated, and seldom causes any

nausea or headache. It generally produces a slight tendency to constipation, which may be obviated by an occasional aperient. From its astringent action on the bowels, it has been found useful in choleraic diarrhœa, dysentery, and other disorders in which tone and astringency are required."

Since I prepared this salt at the request of Dr. Darrach, it has been prescribed by him, and likewise by his father, Dr. Wm. Darrach, in a number of cases; and, as both these physicians have informed me, with a very satisfactory result, considering the short experience they have yet had with it. It seems, therefore, not improbable, that some demand for it may ensue, rendering it needful for pharmacutists to supply themselves with the identical salt mentioned by Dr. Smith as answering the indications better than the others bearing the common name of "iron alum."

It is well known that sulphuric acid forms several combinations isomorphous with common alum, yet containing no alumina. Thus, a "chromic alum" may be formed, in which the sulphate of sesquioxide of chromium replaces the analogous salt of aluminum—a "manganic alum," in which the sulphate of manganese replaces the salt of alumina—and a "ferric alum," in which the same replacement is assumed by the sulphate of the sesquioxide of iron. These salts may also, in like manner with common alum, be varied by the substitution of soda or ammonia for the potash of the latter salt. It is this last combination which is so particularly recommended by Dr. W. Tyler Smith, the chemical constitution of which is thus represented:—



This salt is readily prepared, if certain precautions are observed; but as my own first and second attempts to produce it failed of entire success, I have thought that a record in the pages of the Journal, of the process by which I obtained a very satisfactory article, might be useful to other pharmaceutical chemists.

The formula for preparing the "Ammonio-Ferric Alum" may be thus stated:—

|                                           |                        |
|-------------------------------------------|------------------------|
| Pure crystallized protosulphate of iron,  | 3 viij (troy.)         |
| Sulphuric acid,                           | f. 3 vij.              |
| Nitric acid, (common strength, or 36° B.) | f. 3 iiss. (vel q. s.) |
| Sulphate of ammonia,                      | 3 ij 3 ij. (troy.)     |

Boil the sulphate of iron in two pints of water, and add to it the sulphuric acid; when dissolved, add, in small portions gradually,

the nitric acid, boiling for a minute or so after each addition, until the nitric acid ceases to produce a black tint in the liquor. The complete change of the proto-sulphate of iron to a persulphate, is, towards the last, accompanied by a violent boiling and evolution of deutoxide of nitrogen; rendering it necessary to use a vessel for the operation capable of holding double the quantity put into it. Boil the solution of persulphate of iron to about half its volume; then add the sulphate of ammonia, and set it aside for spontaneous evaporation and crystallization. Wash the crystals rapidly but thoroughly in very cold water, then press them wrapped in copious folds of bibulous paper, and afterwards dry them in the open air. The crystals should be nearly colorless, but with a slight dark tint. When perfectly formed, they are octohedrons, but are usually truncated. Further experience may possibly dictate some improvement in the above proportions, but they are sufficiently near to produce good results.

*Philadelphia, 6th mo. 9th, 1856.*

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#### ADDENDUM TO "MORE POISON IN 'SODA WATER.'"

On page 102 of the present volume of this Journal, will be found a brief article from my pen, intended to show the presence of *lead* and *tin* in "soda water;" but especially the more poisonous metal, lead. For besides the chlorides of tin, I believe our toxicologists do not acknowledge any poisonous oxide or salt of this metal. Notwithstanding the existence of tin in the carbonated water was but a secondary matter of concern, yet the presence of that metal was inferred under circumstances so adverse to the deductions from the common routine of analysis, that I was induced to say in the article alluded to: "I may refer to the reactions of ferro-cyanide of potassium and tin more particularly at another time."

The subject, however, escaped my attention, until it was recalled by a letter from a correspondent, (though personally a stranger to me,) of Lowell, Mass. After the perusal of my article, already cited, he proceeded to analyse some of the carbonated waters of the shops of that city. He found the specimen examined to be "strongly impregnated with *copper* and *lead*;" but no indications of tin presented themselves. To ob-

tain the same reactions that I did, he "added to filtrates 2 and 4 [equivalents of my experiments 8 and 9], ferro-cyanide of potassium; and, in both cases, a fine blue precipitate was produced. Knowing," continues my correspondent, "that the soda water came in contact with iron in no stage of its manufacture and sale, suspicion fell upon the water from which it was made. To decide the point, half a gallon was taken from the pump, evaporated and tested for iron, when its presence was made evident; thus accounting satisfactorily for the presence of iron in the soda water." And he queries whether the reaction observed in my experiments 8 and 9 could not have been occasioned by the same cause.

Having repeatedly, yet contrary to all published authority, obtained results from the reactions of ferro-cyanide of potassium with tin, in all respects the same as those with the filtrate from my 4th experiment, I could only suppose that tin was retained in the filtrate by the possible presence of some agent like that of chloride of ammonium in solutions of other metallic oxides, &c.; but why should the precipitate with  $K+Cfy$  be *blue*?

In compliance with the suggestion of my friend, I obtained a quantity of water from the well used by the manufacturer of the "soda water," and evaporated it to dryness. On re-dissolving the residue in a small quantity of dilute nitric acid, and testing the resulting solution with sulpho-cyanide of potassium, and with ferro-cyanide of potassium, perceptible indications of iron were manifested.

I was now induced to question the purity of the tin experimented with on the former occasion. It was obtained for pure tin. Parcels were subjected to the action of acetic acid and of nitric acid. In both cases the sulpho-cyanide and the ferro-cyanide just named, produced the characteristic indications of iron. Sulphydric acid was passed into an acetic acid solution of the metal, and the filtrate, after boiling, treated with ferro-cyanide of potassium; as formerly, a "blue tinge," or rather pea green color followed.

In all probability, therefore, the two metals found in the carbonated water of the new apparatus, were lead (certainly) and *iron* instead of tin; the iron being derived, not from the apparatus, but from the water charged with the gas.

JNO. T. PLUMMER.

## QUININE AND CARBONATE OF AMMONIA IN PILLS.

By J. M. MAISCH.

In Washington, D. C., several years ago, I often had to prepare pills composed of sulphate of quinia and sesquicarbonate of ammonia. I did not meet with similar prescriptions again until lately here. Of such a combination some physicians seem to think very highly, and a few remarks on the subject may not be out of place.

Sulphate of quinia and carbonate of ammonia decompose each other, and under the evolution of carbonic acid, form sulphate of ammonia and the alkaloid quinia; the carbonic acid, therefore, must be got rid of before the two salts can be made into pills, as a generation of the gas, after the pills are rolled, causes them to swell considerably and burst into pieces. The quickest way to attain that end, is to rub both salts with strong alcohol, which, acting as a solvent, induces their mutual decomposition, and being itself volatile, evaporates easily from under the pestle: the residue is then to be mixed with the extract of gentian, which is usually prescribed. Prepared in this way, the pills keep well. but the question arises, do they really contain what the physician intends to give? The carbonate of ammonia is ordered for its stimulating power it appears, and sulphate of ammonia cannot have it in the same degree. It may therefore be best, and the physician consented to this suggestion, to prepare first the quinia from its sulphate, which may then be mixed without decomposition with the sesquicarbonate of ammonia.

If it should be desirable to exhibit the medicine in form of powder, the bicarbonate of ammonia must be used in place of the sesquicarbonate, and if it is to be mixed with the sulphate of quinia, it is well to dry this salt first at  $212^{\circ}$  F., and to make the powder fresh every day; the best plan, however, is to use the alkaloid in lieu of the salt, and enclose the powder in waxed paper or tin foil.

Fresh prepared sulphate of quinia after being pressed and dried between bibulous paper, commences to decompose as soon as rubbed together with the medicinal carbonate of ammonia; but after 6 equivalents of its water of crystallization are expelled by exposure to dry air, it may be kept in a dry place, mixed

with the bicarbonate of ammonia for a short time without an apparent alteration; but at the end of two weeks, I found it to have lost its carbonic acid, and as it still contained some ammonia, it may then be a mixture of sulphate of quinia with a little sulphate of ammonia and a corresponding amount of free quinia.

*New York, May, 1856.*

### ON ACETIC TURPENTINE LINIMENT.

To the Editor of the American Journal of Pharmacy:

*Dear Sir,*—What is Stokes' Liniment, alias Linimentum Alb.? How is it made? What is the best course or rotation to be pursued so that the resulting compound may form a permanent and pleasing liniment?

The mixture has been compounded to the satisfaction of prescribers over several forms. I desire that some form be recommended to pharmacutists, so that in view of a difference of opinion arising, some authority may be pointed to with confidence.

The receipt used in my store for years, and for which I have no authority except as a recorded manuscript, and which has given invariable satisfaction, is as follows:

|                      |        |
|----------------------|--------|
| Take of Acetic acid, | f.℥ii. |
| Oil of turpentine,   | f.℥ii. |
| Yolk of egg,         | one    |
| Oil of lemon,        | ℥i.    |

Rub the oils together with the yolk of egg, adding gradually the acetic acid. Triturate well, adding slowly and with trituration rose water f.℥iv. Mix and form the liniment.

I have dispensed and used another formula with equal satisfaction to my customers as follows:

|                    |          |
|--------------------|----------|
| R. " Rose water,   | f.℥iiss. |
| Yolk of egg,       | one.     |
| Oil of Turpentine, | f.℥iii.  |
| Ol. Lemon,         | ℥ss.     |
| Acetic acid,       | f.℥i.    |

To the yolk of egg slowly add the rose water and rub together in the mortar; then add the turpentine and oil of lemon. Pour the mixture in a pint bottle, and agitate to mix thoroughly, then add the acid and agitate quickly and briskly. It must be kept well corked."

This receipt and directions have been taken from the American



Eclectic Dispensatory, edited by John King, M. D. I have seen even other forms from which linimentum album has been formed, but have not access to them. Your own suggestions and recommendations I know will be received with much pleasure by those in the trade. I know there are others *like myself* who really do not know which (if either) is the proper formula, neither are many of *those who order* it able to instruct us.

Very truly yours,

LAENO.\*

Baltimore, April 29th, 1856.

\*[NOTE BY THE EDITOR.—The preparation known as “Stokes’ Liniment” is occasionally prescribed in Philadelphia, but it is usual with physicians to write out the formula. These prescriptions are found to vary in the proportion of ingredients, as they have been taken from one or the other writer, or as varied by the prescriber. The following form, taken from Griffith’s Medical Formulary, 2d edition, 1854, page 333, is called “Acetic Turpentine Liniment,” and is attributed to Dr. Stokes.

|                            |                              |
|----------------------------|------------------------------|
| Take of Oil of turpentine, | three fluid ounces,          |
| Acetic acid,               | five fluid drachms,          |
| Rose water,                | two and a half fluid ounces, |
| Essence of lemon,          | four fluid scruples,         |
| Yolk of egg,               | one. Mix.                    |

No directions are given for mixing the ingredients.

The manner of preparing it is to mix together the volatile oils and add them gradually to the yolk of egg, previously rubbed down with a little of the rose water, and finally the acid is added and the remainder of the rose water with trituration. At first this liniment tends to separate by standing, the oil of turpentine rises to the top, holding in solution the coloring matter of the egg. With occasional agitation a permanent emulsion is produced, and the yellow color disappears.

The Liniment known as “St. John Long’s Liniment,” and which acquired some celebrity as an application to the chest in pectoral complaints, is quite analogous in composition to the above, being according to Dr. Beasley (Prescription Book, page 350, Amer. Edit.) composed as follows :

|                        |       |
|------------------------|-------|
| “R. Terebinthinæ olei, | 5iij. |
| Acid. acet. fort,      | 3ss.  |
| Aquæ rosæ,             | 3iss. |
| Olei limonis,          | ℥ v.  |
| Ovi vitelli, q. s.     |       |

Misce secundum artem. Fiat Linimentum pro pectore.”]

## ON THE BERRIES AND LEAVES OF ILEX OPACA.

By DILLWYN P. PANCOAST.

*(Extracted from an Inaugural Essay.)*

The *Ilex Opaca* (the American Holly) is one of the most beautiful of our native evergreen trees; it is much used for ornament during the winter holiday season, the bright scarlet of the berries forming a beautiful contrast with the dark luxurious green of its foliage. This variety appears to be entirely indigenous to the Western Continent, being found throughout its Atlantic section from Maine to Louisiana, and is particularly abundant in the State of New Jersey. It is usually a small or middling sized tree, seldom attaining, even in the most favorable situations, an altitude of more than thirty feet, and in our latitude, rarely one so great. The leaves and fruit are the parts used in medicine; the former by their peculiar appearance render the tree quite distinguishable when associated with others of the forest class; they have a bitter somewhat austere taste. The latter are about the size of a pea, possessing a taste at first sweetish, afterwards very bitter, and extremely nauseous. They are principally used in domestic practice, as an alterative, and by practitioners of the "Eclectic School," by whom they are highly esteemed as anti-intermittent, febrifuge, tonic and diaphoretic.

The berries are said also to possess emeto-cathartic properties; we have known six of them to produce brisk catharsis, attended by considerable nausea and headache. From the leaves of the *Ilex aquifolium*, a closely allied European variety, Labourdais obtained an amorphous extractive principle, for which he proposed the name of "Ilicin." As far as I am aware, however, no analysis of the variety under consideration has ever been made.

With a view therefore of ascertaining something with regard to its properties, the following experiments were instituted.

*Chemical Investigation of the Fruit.*

Solution of gelatin and tartar emetic produced no change in an infusion made from the bruised berries. Tincture of the sesquichloride of iron gave a dark, olive-green precipitate, indicating

the presence of either tannic or gallic acid ; but, as heat caused no change, and, upon standing, a dark olive-green substance was deposited, it was inferred that *tannic acid* alone was present, and of that variety which produces green precipitates, with solutions of the per-salts of iron.

A portion of the dregs left from a decoction were heated for some time in a weak solution of carbonate of soda, then filtered ; the resulting liquid produced a copious flocculent precipitate upon the addition of chlorohydric acid, which was entirely dissolved by acetic acid, indicating *pectin* to be one of the constituents.

Two ounces of the berries were introduced into a retort, containing one pint of a strong solution of chloride of sodium, and distilled until six fluid ounces had passed over ; the distillate possessed strongly the odor, and to a slight degree the taste of the fruit, but no evidences of a volatile oil could be obtained.

A quantity of the seeds separated from the surrounding mass were bruised and treated with boiling water, which produced a slight coagulation ; a solution of bichloride of mercury added to this caused a white curdy precipitate, proving the presence of albumen.

Three ounces of the bruised berries were macerated in cold water twenty-four hours, then strained ; this process was repeated several times, until the bitterness seemed nearly all exhausted ; the resulting infusions were then mixed, a solution of subacetate of lead added, filtered, and a stream of sulphohydric acid passed through it ; the sulphuret of lead was then allowed to precipitate, after which it was again filtered and evaporated to the consistence of an extract. One half of this extract was dissolved in two fluid ounces of distilled water, acidulated with acetic acid, then added to a cream of lime, and after standing for some time thrown on a filter and allowed to drain. The precipitate was next washed and dried, after which it was treated repeatedly with boiling alcohol, and the alcohol evaporated to dryness. This process was unattended with any notable results.

The other half of the extract, prepared in the last experiment, was dissolved in a small quantity of distilled water, poured into a bottle, of which it filled about one-third, treated with an excess of the weaker solution of ammonia, and afterwards re-

peatedly agitated with ether, the ether rising to the top upon resting, was decanted, and allowed spontaneously to evaporate. The result was a minute colorless deposit of crystalline scales, tasteless and inodorous.

Eight ounces of the contused berries were boiled in a pint and a half of water down to twelve fluid ounces; the resulting decoction was of a dark brown color, extremely bitter, and nauseous to the taste; it was then strained, filtered, and passed repeatedly through a column of purified bone charcoal; by this process it was deprived of much of its bitterness and color. The charcoal was then washed, dried, and treated with boiling alcohol; this was evaporated to a syrupy consistence; diluted with distilled water, and boiled with a much smaller amount of bone coal than was before used; this was then drained, washed, dried, and treated with boiling alcohol as before, succeeded by a treatment with boiling ether; the resulting liquids were then mixed, evaporated to the consistence of a thin syrup, placed in a bottle, a little pure carbonate of potassa added, after which ether in small quantities was repeatedly poured in, violently shaking upon each addition; this upon reposing formed a supernatant liquid, which was decanted and allowed to evaporate.

The result of this treatment was a deposit of minute acicular crystals, having an intensely bitter taste with slight acidity; freely soluble in ether, soluble also in water and alcohol. Sulphuric acid added to a portion of it dissolved in water, caused slight turbidness, and, upon standing, a white crystalline deposit. Solution of bichloride of platinum produced no change. Tartaric acid caused a slight bluish opalescence or "quinescence," but no deposit. Nitric acid and tr. iodine no change. Solution of tannic acid gave a white precipitate. This principle appears to be the one upon which the bitterness of the fruit is dependent.

#### *Investigation of the Leaves.*

A strong alcoholic tincture was of a dark green color, and upon evaporating to dryness left a dull green, insipid powder, without any marked peculiarities.

An ethereal one, made as the above, from the half-dried, sliced leaves,—their dense and coriaceous nature preventing a satisfactory contusing of them,—was similar to it in appearance, and

yielded chlorophylle, when treated according to the process of Graham.

By a treatment similar to that of the berries, tannic acid of the same variety was detected. One ounce of the leaves were macerated in a pint of water acidulated with two fluid drachms of strong acetic acid for ten days, then thrown in a displacement apparatus and the liquid repeatedly passed through. The resulting infusion was of a yellowish or light brown, with a taste slightly bitter. It was next saturated with magnesia, filtered and evaporated to about two fluid ounces, then poured into a bottle, a portion of carbonate of potassa added, treated with ether, the ether decanted, and, as in former experiments with the fruit, allowed to evaporate spontaneously. The result was a light brown resinous extractive matter, soluble in water, but much more so in alcohol and ether, possessing a slight bitterness.

Three ounces of the leaves were chipped up and boiled in four pints of water down to one pint, then strained and expressed, the decoction filtered and evaporated to one half; the remaining liquid had a dark greenish brown color and an extremely bitter taste; it was then boiled with a small quantity of purified bone charcoal, which deprived it of much of its color and bitterness. The liquid was next poured off, the coal washed and dried, after which it was treated repeatedly with boiling alcohol, and that evaporated to dryness. The result of this treatment was a green extractive substance—the alcohol dissolving out a portion of the green coloring matter,—having a resinoid appearance and fracture, and an intensely bitter taste; it was partially soluble in cold water, entirely so in alcohol and ether, and does not appear to be hygrometric. It evidently contains all of the bitterness due to that portion of the plant from which it was obtained; various attempts to procure from it a crystalline principle have been attended with no definite results.\*

From the above experiments it may be inferred that the constituents of the fruit of the *Ilex Opaca* are, *Tannin*, *Pectin*, *Albumen*, and two *crystallizable principles*; one inodorous, tasteless and inert; the other with no odor, but an intensely bitter taste, probably the one upon which the main activity of the plant is dependant; also salts of *Potassa*, *Lime*, and *Mag-*

[By a careful analysis of the ashes of the berries the author determined the presence of potassa, lime, magnesia, and protoxide of iron.—EDITOR.]

*nesia*, and the *Protoxide of Iron*; those of the leaves to be *Tannin*, of the same order as the above, *Chlorophylle*, a *Resinous extractive matter*, and salts of *Potassa* and *Lime*.

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#### ON THE ALCOHOLOMETRIC SCALES OF RICHTER AND TRALLES.

To the Editor of the American Journal of Pharmacy:—

DEAR SIR—In the Journal of the College of Pharmacy for May, 1856, I observed an article on the specific gravity of alcohol, which, as a manufacturer of specific gravity apparatus, attracted my notice. In the commencement of that paper, the dilemma of Mr. C. Mead is to be noted, who, purchasing alcohol for 80 per cent., finds upon trial that it is nearly 85 per cent. by weight of the U. S. Dispensatory, and nearly 90 per cent. by measure, according to Tralles' tables in Ure's Dictionary. Certainly there appears here no cause of complaint on the part of the purchaser, who gets a better article than he contracted for, an accident which I am confident does not often occur elsewhere. Mr. M. next states, that in his trial of the above alcohol he weighed it and found its specific gravity to be .834 at 60° F., meaning of course that an accurately made 1000 grain specific gravity bottle held only 834 grains of the alcohol. This may well be called the *experimentum crucis*, surpassing in accuracy all other methods of ascertaining the specific gravity of liquids. According to that observation, there can be no doubt but that his conclusions were correct, viz: that the alcohol he purchased was actually nearly 85 per cent. by weight, or nearly 90 per cent. by volume. Mr. M. further remarks, that he is quite sure that the table of the U. S. Dispensatory is not the standard by which distillers' instruments *here* are made. If by the distillers' instruments, the Berlin hydrometers, or those made here and copied after them, are meant, then Mr. M. is likewise correct, and we are obliged to admit that the Berlin instruments are not quite so infallible as many imagine; unless it be supposed that all the printed tables given in the various works, which will be referred to presently, are erroneous.

In Mr. A. P. Sharp's reply to Mr. Mead, it is stated, that according to order of Congress, the percentage of alcohol is to be measured by volume, and this agrees with the usage of all manu-

facturers and dealers, who always sell by measure and not by weight. By not paying proper attention to this fact, many vexatious disputes arise between buyers and sellers, one selling by measure the other testing by weight, and finding the percentage much less than it was represented to be.

We are also informed that the U. States have adopted Gay Lussac or Tralles' alcoholometer, meaning, I suppose, the scales graduated according to the experiments of those observers.

These scales, however, are not identical, being the results of independent experimenters; Tralles' scale being made for the English Government excise, and Gay Lussac's for that of France. Besides the discrepancies arising from the experiments themselves, the normal temperature of the two observers are different, Tralles' scale indicating the percentage at 60° F. and Gay Lussac the same at 59°. The variation from this case is certainly not very important, but is farther increased by the fact of Tralles' taking water at its greatest density (39½° F.) at 1.000, thus making zero or commencement of his scale to equal .9991, while Gay Lussac reckons the density of water at 59° F. to equal 1.000. In all the instruments I have seen, the zero of Tralles' scale commenced at 1.000 sp. grav.; this does not interfere with their accuracy, for the specific gravities of all the percentages being increased in the same ratio, by dividing by .9991, or which is nearly the same, adding .0009 we obtain a corrected scale beginning at 1.000.

The greatest difference between the two scales is about 1 per cent., varying in different parts of the scale, and from some observations I have made, I should judge that the name "Gay Lussac" and "Tralles" is used indiscriminately.

The Berlin made alcoholometers, when examined with reference to Tralles' tables, are in general very reliable; I have tested many of them with the specific gravity bottle at various points of the scale and found them correct. The table of Tralles referred to, may be found in Ure's Chemical Dictionary, Booth's Encyclopedia, Muspratt's Chemistry, &c.; those of Gay Lussac in Gmelin's Hand-Book of Chemistry, vol. i., and in Booth's work.

The corrections for temperature generally adopted, namely, to increase the observed percentage 1 degree, for every 5 degrees the thermometer stands below 60° F., and to decrease the

percentage the same amount for every 5 degrees below  $60^{\circ}$ , is tolerably accurate, more so in strong alcohol than in dilute, and the nearer as the temperature approaches  $60^{\circ}$ . A more reliable method would be to use a table of corrections for all temperatures and percentages; such a table is given by Ure and Booth, art. Alcoholometry.

The foregoing remarks on the correctness of the Berlin alcoholometers refer solely to the scale marked "Tralles," and indicating the percentage of alcohol by volume or measure. In the concluding paragraph of Mr. Sharp's answer, there is mentioned "Richter's scale, which shows the per cent. of alcohol by weight."

Now this scale will be found upon examination to be quite erroneous, although placed upon instruments made by celebrated makers in Berlin. It may possibly be a scale intended originally for local or particular use, but that it indicates percentage by weight it certainly does not. This assertion I feel confident will be rendered evident by the following remarks:—

In chemical analysis and investigations, alcohol is always used by weight, and hence very accurate determinations have been made of the specific gravities of various mixtures of alcohol and water by weight. In Booth's Chemistry, (art. Alc.,) a table of comparison is given between percentages by volume and weight. For illustration I give a few of the numbers. 20 per cent. by vol.=16.28 per cent. by wt. 40 by vol.=33.4 by wt. 60 by vol.=52.2 by wt. 80 by vol.=73.6 by wt. 90 by vol.=85.75 by wt. Upon comparing these numbers on the scale of several genuine Berlin hydrometers, by Lohme and others, I find 20 per cent. vol.=13½ wt. 40 vol.=27⅔ wt. 60 vol.=46 wt. 80 vol.=69 wt. and 90 vol.=81½ wt., results which differ 5 or 6 degrees from the table above!

Again, by taking the specific gravities corresponding with these percentages and comparing them with the tables given in various works, we observe the same discrepancies.

These tables of the specific gravity of all percentages of alcohol by weight are found in the U. S. Dispensatory, in Gmelin's Chemistry, vol. viii, in Turner's Chemistry, in the Prussian Dispensatory, published in Leipsic; an original set of experiments made by Fownes, is given in his Chemistry, agreeing closely with the others; the same table is re-published in Muspratt's new work



on Chemistry; and finally there is seen in "Meissner's Areometry" (Vienna), an engraving of the two scales, marked "Tralles" and "Richter," placed side by side in conjunction with a scale of specific gravity. All these authorities agree closely with the table of comparison by Booth, and prove conclusively that the scale of the Berlin instrument marked Richter, does not indicate percentage by weight correctly, as has been asserted and generally believed.

I trust that my motive for making the above remarks may not be construed into a desire to detract from the merits of the foreign instruments used here; but as a manufacturer of similar instruments, I do not desire, where such wide discrepancies occur in comparing my hydrometers with others, to have the difference pointed out as a proof of error on my part.

Under the title of foreign instruments, I include most of those sold in this country as imported, but actually made here and copied after the genuine Berlin ones more or less carefully, according to the price.

It may be said, perhaps, that as the scale of percentage by weight is but seldom used, the error is not a very important one; still as it *may* be referred to, all source of error should be avoided, particularly in an instrument of such general employment.

What I have said may be the means of explaining away unpleasant differences, which are often occasioned by the use of erroneous instruments. Yours, respectfully,

W. H. PILE.

*Philadelphia, June 13th, 1856.*

[NOTE BY THE EDITOR.—Dr. Pile informs me that the scales of his alcoholometers are computed directly from the published tables to which he refers. He also graduates hydrometers, showing specific gravity, intended more particularly for Pharmacutists and Chemists; these latter instruments are by far the most important, and second only to the specific gravity bottle in the scope of their application, and in my experience with them, are sufficiently accurate for all practical purposes.

We have examined several of the Berlin alcoholometers, and find the numbers as given in the above article to be correct. The tables are also quoted correctly.]

## ON A COMPOSITION FOR ATTACHING LABELS.

By FREDERICK STEARNS, Pharmaceutist.

Having noticed in the March number, the present year, of the American Journal Pharmacy, an article upon "Unalterable Labels for the Cellar," it occurred to me that the method I have employed for some years, in giving adhesiveness to dispensing and other labels, might be of some service to the readers of the Journal. It is as follows :

Take of white glue (Cooper's best) *three ounces*, (avoir. ;) refined sugar *one and a half ounces* ; water *ten fluid ounces*, or a *sufficient quantity*. Dissolve by the aid of a water-bath, and use while warm, applying it by means of a suitable brush to the reverse side of the labels while uncut or in sheets. After being dried and moderately pressed they are ready for cutting.

A little experience will show the propriety of increasing or lessening the amount of water used ; for instance, if the paper is thin and well sized, more may be added ; on the contrary, if the paper be thick and without sizing, less is required ; in all cases it should be quickly and evenly spread upon the paper.

It is not applicable to the purpose of a common paste, as it can only be used while warm.

I have found the use of it to possess these advantages : Labels prepared with it adhere more firmly than when any other adhesive substance is used ; it does not penetrate, and thus disfigure the label, and when applied to glass they never become loose, as is often the case when acacia and tragacanth are used, when moistened with saliva. No disagreeable impression is left in the mouth, as with dextrine, and it would well supply the place of that material upon Post Office stamps, gum tickets, etc.

*Detroit, June 10<sup>th</sup>, 1856.*

## CONTRIBUTIONS TO TOXICOLOGY.

[Translated From Archiv. d. Pharm. and Buchner's N. Repertorium.]

BY JOHN M. MAISCH.

*Poisoning by Farina Amygdalæ Amaræ.* By X. LANDERER.

A lady suffering from a herpetic eruption on several parts of the body, was ordered by her physician to use bran baths, which she, however, changed for almond bran baths. After being a few minutes in the warm bath, she was seized with dizziness and anxiety, vomiting, weakness and convulsions of the extremities, so that she had to be lifted out of the bath. After giving her cooling drinks, the symptoms gradually disappeared after several hours, with the exception of a great weakness that lasted several days. The bran consisted of the residue (after expression of the oil) of sweet and bitter almonds.

Crusta lactea is one of the most common diseases of the skin among the children in Greece, where at least 40 to 50 per cent. suffer with it. In such a case a mid-wife recommended bathing of the parts with bitter almonds, which had the effect of drying up the eruption and clearing face and head; but at the same time the child began to cough, exhibiting symptoms of bronchitis and laryngitis, causing death in a few days. These symptoms may have been caused by a toxication by hydrocyanic acid, or more probably by the rapid healing of the eruption stopping the secretion. Very often in the Orient, children die of hydrocephalus, following a quick cure of crusta lactea.—(*Buchner's Neues Repert.* iv., 453.)

*Action of White Lead on Birds.* By PROF. FALCK, of Marburg.

From his numerous physiological experiments, the author arrives at the following conclusions:

1. White lead acts poisonous on the domestic birds.
2. In relatively large doses mixed with the food, it decreases or destroys the appetite.
3. This decrease of appetite is not the consequence of an incipient inflammation of the first passages, but of a dyspepsia.
4. The saturnine dyspepsia, analogous to that of man, seems to be caused by a precipitation of the ferments of the stomachic

juices, and an invisible alteration of the mucous membranes of the first passages.

5. This lead-dyscrasy ceases after changing to the ordinary food, and therefore is not rooted in a deep alteration of the body. (Only one experiment.)

6. During the formation of the dyspepsia, the blood and organs of the birds are in a state of constant change and excretion by perspiration and excrements.

7. As the blood and organs under the existing dyspepsia cannot be nourished in the usual order, their mass must diminish.

8. To the dyspepsia a tabes is very soon added, which must be called "tabes saturnina."

9. The dyspepsia can be joined by anæmia or oligæmia, if life is not destroyed too soon.

10. The decrease of the weight of the body under the influence of lead, is the same as that caused by the want of food.

11. The temperature of the body falls with its diminishing mass.

12. The lead-dyscrasia and cachexia of the human body do not occur with birds.

13. Lead-eclic seems to occur, but seldom with birds.

14. The liver seems to secrete much bile under the influence of white lead.—(*Deutsche Klinik* 1855, 19—23.)

*Poisoning by Tincture Sem. Colchici.* By DR. ROUX, of Toulon.

On December 7th, 1851, five patients at the Prisoner's Hospital received, by mistake, 60 grm. tinct. sem. colchici, instead of tinct. cinchonæ. Three hours afterwards two of the patients experienced violent burning in the epigastrium, colic, vomiting, purging, slow pulse, paleness and coolness. After two and a half hours the five patients showed these symptoms increased, with burning heat in the pharynx and along the œsophagus, constant thirst, insupportable pains in the epigastrium and abdomen, numerous stools of a yellow color without slime or blood, consciousness, sensibility, mobility and power of speech unaltered, pupils normal; the pulse of two was imperceptible, one felt a continuous tingling in the ears.

During the following night three died. On the following

morning the remaining two complained of intense burning in the throat, thirst, colic, tenesmus, pains in every limb, dizziness, coolness of the skin, livid lips and nails, and died with full consciousness in the course of the day.

*Autopsy 36 hours after death.*—Calm expression of face, eyelids open, pupils normal; nails, hands and some parts of the skin blue; digestive organs no ulceration, no inflammation in pharynx and œsophagus; stomach and intestines contained little gas, but much of a turbid liquid; mucous membrane softened, somewhat red-spotted, without ulceration; liver full of blood; gall bladder a moderate quantity of bile; kidneys contained much blood, bladder a little urine, its membrane with some red spots; heart flabby, with little black blood and fibres; vena porta and vena cava inferior, enlarged; all blood gelatinous; lungs healthy, no hypostasis; in the pleuræ, pericardium and peritoneum no serum; brains and spine considerably injected; meninges vividly red, a cut through the ventriculæ ejects blood; the spinal cord is softened.

All muscles are of a free red color, hard and without any sign of decomposition. The analyses of the vomited matter, stools and serum, showed to contain tinct. sem. colchici, by comparison with the reactions of other liquids mixed with the same. Dr. Roux thinks colchicum destroys human life by its action on the cerebro-spinal system, and not by producing inflammation of the digestive organs.—(*Union Medicale*, 1855.)

NOTE.—The French official tinct. sem. colchici is prepared by macerating 100 grms. of the seeds in 400 grms. of alcohol of 56 per cent.

*Method to discover Phosphorus.* By PROF. E. MITSCHERLICH.

The most delicate test for phosphorus is the distillation of the suspected substance, especially flour paste, with a little sulphuric acid and water. The apparatus is a simple one; it consists of a flask, (a retort is objectionable,) to which is attached a long glass tube, connected with a glass cooler, which consists of a cylinder, through the bottom of which reaches the cooling pipe into a bottle; a stream of cold water is conducted to the bottom of the cylinder, displacing the warmer water at the top. Where the aqueous vapors from the flask reach the cooling tube, a lumination is constantly observed in the dark, usually a luminous ring.

From a mass weighing 5 oz., containing 1-40 grain = 1-1000 per cent. = 1-100000 part of phosphorus, 3 oz. may be distilled off, which lasts over a half hour without cessation of the lumination. In one experiment the distillation was stopped at the end of half an hour, and the flask left open in contact with the air for two weeks; when the distillation was commenced again the lumination was as perfect as before. If ether, alcohol or turpentine are present, they will prevent the lumination, which commences as soon as they have passed over.

At the bottom of the last bottle, globules of phosphorus are found; 5 oz. substance, containing one-third grain phosphorus, gave so many globules that one-tenth part of them would have been sufficient to distinguish them as phosphorus. Larger quantities, which contain much phosphorus, may, during the process of distillation, oxydize sufficiently that phosphorus acid may be found by nitrate of silver and bichloride of mercury. But this can never be a proof for poisoning by phosphorus, unless it has been found itself.

To determine the volatility of phosphorus and phosphoric acid, two drachms of a mixture of the two obtained by oxydation in the air, were distilled several times with water; by the magnesia-ammonia test not a trace of the acids could be found. But nitrate of silver was colored brown, afterwards precipitating some imponderable brown floccules, and bichloride of mercury was rendered slightly turbid. The distillate of diluted phosphoric acid, with a little dust taken from an unoccupied room, and of a small piece of a decayed human stomach, with water, gave the same reactions, on which, therefore, in forensic analysis, no reliance can be based.—(*Journal f. Prakt. Chemie*, 1855, No. 20.)

#### *Action of Red Phosphorus.*

Reynat and Lassaigne, by a series of experiments, have found that red phosphorus in the dose of 5 grammes is not poisonous to dogs, nor to birds in the dose of 3 centigrammes, and that in general it is without action on the mucous membranes.—(*Rép. de Pharm.*, 1854.)

INTRODUCTION OF THE CULTURE OF CINCHONA INTO  
JAVA.\*

There are, in various countries, certain raw products which cannot be collected—or, more properly, which *never are* collected—without the complete extirpation of the plants which afford them. The gutta-percha trees of the Indian Archipelago are a lamentable example of this; and another, even more lamentable, the cinchona forests of the South American Andes. The annihilation of the latter goes on with such giant strides, that the noble cinchona forests will, in a few years, cease to exist. The inhabitants of the Andes never think of future plants, and the duty recently laid by the State of Ecuador upon the exportation of the bark will not diminish the demand, and can, under the most favorable circumstances, put only a partial check on the evil. Even for the propagation of the species the needful seeds will be scarcely obtainable—perhaps, indeed, no longer so; meanwhile, there is no doubt the use of quinine will continue, as at present, on the increase. How great would be the difficulty, if the supply at last ceased!—if the poor fever-patient asked in vain for the remedy which now brings him such speedy relief—if the physician had to seek, perhaps without success, for some new agent to subdue fever!

A German *savant* has the merit of having foreseen this undesirable state of things, and of having proposed a practical method of warding off the impending evil. Professor Dr. Miquel, of Amsterdam, in the year 1846, threw out the idea of introducing the culture of the cinchona into the mountainous districts of Java, and, for the promotion of this object, presented to the Ministry of the Dutch Colonies a memorial, in which he demonstrated the possibility of such introduction, which later experiments on the island have completely confirmed. The ministry willingly took up the memorial, and consented unconditionally, according to the proposition, to send a qualified, careful person to Peru, in order to import thence into Java, by way of the Pacific Ocean, a whole ship-load of plants and seeds. M. Hasskarl was charged with the expedition; and, before one year had elapsed, arrived safely with his cargo in Java, where he found

\* *Bonplandia*, Dec. 15th, 1856:

the seeds sent out by him *via* Holland already in luxuriant growth. Unfortunately, many plants were lost during the voyage across the Pacific, notwithstanding which there remained a sufficient number alive to secure *Cinchona Condaminea* and some other species, and at once to test the possibility of this important culture in Java.

The Dutch government (especially the minister, M. Pahud, who took up the subject warmly), Professor Miquel, and M. Hasskarl—all, in short, who have co-operated to bring about this desirable object—have just cause to be proud of the credit which accrues to them for the introduction of cinchona culture into Java, and can honestly accept the praise which will be on all sides awarded them. We heartily congratulate Professor Miquel and M. Hasskarl on the decoration of the Order of the Lion bestowed on them by the King of the Netherlands, which affords a proof that their services have met with deserved acknowledgement in the highest quarters.

It were to be wished that nations having colonial possessions had followed the example of the Dutch. The French introduced, some years, since, cinchona plants in the mountain regions of Algeria; but nothing is yet announced of the result. To the English, the higher parts of the West Indies and the highlands of India offer a vast field for experiment. Professor Miquel has published, or is about to do so, a pamphlet on this new branch of cultivation, which cannot fail to direct the attention of the French and English governments to the subject, and perhaps may serve directly to secure to posterity one of the most important of remedies, and to clothe with an enviable renown the name of Miquel, as one of the benefactors of mankind.—*Pharm. Journ.* April 1st, 1856.

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#### ON CATECHU AND ITS ACIDS.

BY DR. C. NEUBAUER.

By Strecker's experiments on gallo-tannic acid and his proving its relation to gallic acid, the interest in the numerous bodies to which the name of tannin is applied has been created anew, and the author undertook these experiments in the hope to find



a relation, similar to the above, existing between catechu-tannic and catechuic acids. The author attempted to prepare the catechu-tannic acid by the process of Berzelius, to precipitate the aqueous tincture of catechu by sulphuric acid, decompose the precipitate by carbonate of lead, and evaporate the liquor in vacuo above oil of vitriol. But even a strong solution of catechu extracted by its own weight of cold water, yields but a slight precipitate with sulphuric acid, which remains suspended in the liquid, and does not settle after standing or moderately heating. A warm or hot prepared solution is instantly precipitated by sulphuric acid, caused, however, chiefly by the then dissolved catechuic acid, which I found instantly yields a yellow flocculent precipitate with it. Berzelius experimented on catechu-tannin in 1828, and used a warm prepared aqueous solution, thus obtaining also catechuic acid in solution, which was discovered in 1832 by Nees von Esenb  ck. Having thus failed in preparing catechu tannic acid, the author tried the second method given by Berzelius, that of exhausting catechu in a percolator by ether. The yellowish solution did not separate into two strata, and was evaporated to dryness partly above oil of vitriol, another part in the water-bath. A porous brownish mass remained behind which, to separate it from a little ether, was dissolved in a little water, and, after Strecker's recommendation, slightly heated in the water-bath for a short time. The solution soon lost its smell of ether, but contained some green insoluble flocks, which were separated by filtration; the solution, on cooling over oil of vitriol, crystallized in fine white needles, which after filtration were recrystallized from warm water. The darker mother liquor precipitated gelatin, and did not yield any more crystals; these, from the following reactions and the elementary analysis, proved to be *catechuic acid*:

Heated with concentrated sulphuric acid it assumed a purple violet color, with solution of caustic soda, a brown color; the watery solution was instantly precipitated by acetate of lead (white;) sesquichloride of iron, at first a green color, afterwards a dirty green precipitate; gelatin was *not* precipitated, but sulphuric acid instantly, (yellowish.)

As these methods failed to yield catechu-tannic acid in some quantity, it might have been possible that this tannin, under the

influence of the air, was oxydized to catechuic acid. Several chemists believe in this behaviour, and Delffs asserts, that an aqueous solution of catechu-tannic acid, left to a spontaneous evaporation in a shallow vessel, fills with white crystals of catechuic acid, which take the place of the gallic acid on exposure of gallo-tannin; and that catechu contains catechin (catechuic acid) only as a product of decomposition of the tannin during the process of inspissation. To gain some light on this assertion, another quantity of catechu was exhausted with ether, which had been previously saturated with water. This solution had only a tinge of red; it was divided into three parts, one of which was evaporated in vacuo above sulphuric acid, the second at a moderate heat, and the third spontaneously in the open air; all left a resin-like, little colored mass, resembling gallo-tannic acid. The residues were all dissolved in very little water, the solutions heated to expel the ether, filtered and placed over sulphuric acid, where all on cooling stiffened to a mass of crystals, which under the microscope proved to be very fine needles, the former result not altered by the use of ether saturated with water, or by evaporation in vacuo. The crystals were purified by recrystallization from water, wrapped in paper and dried in the air. The mother liquors from the first crystallization necessarily must contain the tannin with some catechuic acid; it was left in an open vessel to the action of the atmosphere for six months, without its showing even traces of crystallization.

By the above methods, a mixture of catechuic and catechu-tannic acids, with a small quantity of colored matter (chlorophyl) is obtained, at it would seem that the catechuic acid is not formed by the action of the air on the tannin, but that it exists in the catechu, from which it is extracted by ether, as Nees von Esenbeck already stated, and Delffs observed the crystallization of catechuic acid only from a diluted solution. The author now prepared a larger quantity of catechuic acid, by exhausting catechu with watery ether, distilling off the ether in an atmosphere of carbonic acid, and towards the end in vacuo near oil of vitriol, dissolving by a moderate heat in water, filtering, recrystallizing twice, washing with cold water, and after pressing the white crystals, drying them at the ordinary temperature wrapped in much bibulous paper. The mother liquor from the

first crystallization was reddish brown, precipitated gelatin, and therefore contained the tannin. The other mother liquors had a yellowish color, which, after standing 24 hours, changed to a red, like that of the first; they also precipitate gelatin. The mother liquors were evaporated by means of a water-bath, when gradually they became turbid and the reaction with gelatin stronger; after evaporation to dryness, a shining, cracked, spongy mass remained, easily yielding a cinnamon-brown powder like that of catechu. Now it was only partly soluble in water; the brown filtered solution immediately precipitated gelatin; when treated in the percolator like catechu, it still yielded a considerable quantity of catechin; the ether had a slightly yellowish color; alcohol dissolved nearly all the residue.

Snow white catechuic acid was now dissolved in water, the solution had a yellowish tinge and did *not* precipitate a clear filtered solution of gelatin; it was boiled in an open dish for three hours, when it had become turbid and of a yellowish brown color, and after evaporation it dissolved with a dark color in water, leaving a reddish brown residue. The solution now *immediately precipitated a clear filtered solution of gelatin*, a fact observed already by Wackenroder.—(*Ann. d. Ch. and Pharm.* xxxvii., 376.)

This is a strong proof for the allegation that pure catechuic acid, under the influence of heat and the air, is converted into a substance which must be looked upon as a tannin. Büchner (*Geiger's Pharm. i.*, 864) says that catechuic acid, when heated until it becomes brown, changes to a tannic acid. But to entirely effect this change through the influence of heat and air is very difficult.

Catechuic acid was now prepared by the process recommended by Berzelius; catechu was first exhausted by cold, afterwards by boiling water, this last solution precipitated by sugar of lead as long as a colored precipitate was formed; the pale yellow filtrate was freed from the lead by hydrosulphuric acid, filtered while still hot, and yielded on cooling nearly white catechuic acid, which was recrystallized and washed with cold water.

The following are the results of the elementary analysis :

|   | I.         |     |       | II.    |       |   | III.       |     |       | IV.    |       |       | V.     |  |  | VI.    |  |  |
|---|------------|-----|-------|--------|-------|---|------------|-----|-------|--------|-------|-------|--------|--|--|--------|--|--|
| C | 17         | 102 | 52.58 | 52.46  | 52.78 | = | 17         | 102 | 61.08 | 60.95  | 61.32 | 61.20 | 61.77  |  |  |        |  |  |
| H | 12         | 12  | 6.18  | 6.09   | 6.08  | = | 9          | 9   | 5.39  | 5.29   | 5.25  | 5.17  | 5.10   |  |  |        |  |  |
| O | 10         | 80  | 41.24 | 41.45  | 41.14 | = | 7          | 56  | 33.53 | 33.76  | 33.43 | 33.63 | 33.13  |  |  |        |  |  |
|   | 194 100.00 |     |       | 100.00 |       |   | 167 100.00 |     |       | 100.00 |       |       | 100.00 |  |  | 100.00 |  |  |

I. and II. is the acid prepared by ether air-dry; III., IV. the same dried at 100° C. (212° F.) until it *just* ceases to lose weight; V., VI. dried in the same way was prepared by water. The loss of the drying operation is 14.34 per cent.; 3HO are 13.92 per cent. When heated for a longer time the acid gradually assumes a yellow and brown color, and the loss increased to 15.85 per cent. Such a yellow acid on elementary analysis, gave results closely approaching those of Svanberg and Zwenger—C 62.62 H 5.24 O 32.14.

The lead salt was prepared by precipitating a warm solution with acetate of lead, filtering and washing quickly, pressing between bibulous paper and dried on the water-bath. It had a brown color and could not be obtained white; the results of the analysis approached as near as could be to the formula  $C_{17}H_9O_7 + 2PbO$ .

All the above experiments have been made with that variety of catechu called Bombay catechu.\* For the following experiments Gambir catechu was used, and the catechuic acid prepared partly with ether, partly by Wackenroder's method, by macerating the catechu in three parts of cold water and boiling the residue several times with eight parts of water; the first crystallization is yellow, the others nearly white, and are to be recrystallized. The analytical results are the same as above.

White catechin was now boiled with diluted sulphuric acid (1HO,  $SO_3$  to 24HO) for three or four hours. The cinnamon-colored precipitate was filtered, the filtrate saturated with carbonate of baryta, filtered and precipitated with acetate of lead; the filtrate was treated with hydrosulphuric acid to separate the lead in excess, evaporated in the water-bath, the brown residue dissolved in water, again treated with acetate of lead and hydrosulphuric acid, left a colorless crystalline residue, easily soluble in water, consisting chiefly of acetate of baryta, which was

\* The author's description corresponds with that of *Pegu and Bengal catechu*, in Wood and Bache's *Disp.*, 10th edit., 199, 200.

separated by sulphuric acid; the solution was tested for sugar, but not a trace was found. The above cinnamon-colored matter was insoluble in water, alcohol and ether, caustic potassa was colored slightly violet by it, concentrated sulphuric acid dissolved it, which solution was precipitated by water.

The behaviour of catechu-tannin to sulphuric acid was tried in a similar manner. Bombay catechu was exhausted with ether, the solution treated with water and evaporated to dryness; the residue dissolved in water and filtered from the crystallized catechuic acid. After long standing, the filtrate separated only some brown matter, but no catechuic acid; it was precipitated with and washed with sulphuric acid, and after pressing several hours, boiled with diluted sulphuric acid. The reaction and subsequent treatment was the same as above; 5 C. C. of Fehling's test separated only traces of suboxide of copper. Analysis showed the cinnamon-colored matter to consist of  $C_{17} H_{10} O_{10}$ ; but there was no proof of its purity. The purest catechuic acid reduces suboxide of copper from Fehling's test liquid.

From the above the author comes to the following conclusions:

1. *Pure catechu-tannic acid* cannot be obtained by any of the above methods.

2. Catechuic acid bears not the same relation to catechu-tannin as gallic acid to gallo-tannin.

3. The different properties of the different kinds of catechu are probably the result of a different process of preparation.\*

4. The catechuic acid of the different kinds of catechu is the same; composition  $C_{17} H_{12} O_{10}$ , of which 3HO are expelled at  $100^{\circ} C.$  ( $212^{\circ} F.$ )

5. Catechuic acid is decomposed if exposed to a heat of  $100^{\circ} C.$  for a long time.

6. Pure catechuic acid, decomposed by sulphuric acid, yields much of a brown insoluble substance, but no sugar.

\* Nees von Esenbeck says, in Buchner's Repert. xliii., 352:

"As Bombay catechu contains though less catechin, we return to our opinion that, like gambir, it is obtained from *Uncaria gambir*. Its smaller amount of catechin, its larger of tannin and its browner color, may be due to the boiling of the branches and the wood of the *Uncaria* and the subsequent evaporation. It is also not impossible that the branches from which the gambir has been prepared, by decoction yield an extract resembling Bombay catechu."

7. Neither does catechu-tannic acid yield sugar, if treated in the same way.

8. A solution of pure catechuic acid is precipitated by sugar and reduces Fehling's test liquid.—(*Annalen d. Chemie u. Pharm.* xvi., 337—361.)

MAISCH.

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### THE MUSK-DEER.

(From the Pharmaceutical Journal.)

This little persecuted animal would probably have been left undisturbed to pass a life of peace and quietness in its native forests, but for the celebrated perfume with which nature has provided it. Its skin being worthless from its small size, the flesh alone would hold out no inducement for the villagers to hunt it while larger game was more easily procurable, and its comparative insignificance would alike have protected it from the pursuit of the European sportsman. As the musk, however, is the most valuable of all, no animal is so universally sought after in every place it is known to inhabit. Musk is in demand in nearly every part of the world, yet little, I believe, is known of the nature and habits of the animal that produces it.

The musk-deer is rather more than three feet long, and stands two high at the shoulder; but they vary considerably in size, those found in thick shady woods being invariably larger than those on rocky open ground. The head is small, the ears long and erect. The male has a tusk depending from each upper jaw, which, in a full-grown animal is about three inches long, the thickness of a goose-quill; sharp pointed, and curving slightly backwards. The general color is a dark speckled brownish-grey, deepening to nearly black on the hind-quarters, where it is edged down the inside of the thighs with reddish-yellow. The throat, belly, and legs are of a lighter grey. Legs long and slender; toes long and pointed; the hind heels are long, and rest on the ground as well as the toes. The fur is composed of thick spiral hairs, not unlike miniature porcupine quills; they are very brittle, breaking with a slight pull, and so thickly set, that numbers may be pulled out without altering the outward appearance of the fur. The fur is much longer and thicker on the hind parts than the fore, and gives the animal the appearance

of being much larger in the hind-quarters than the shoulder. The tail, which is not seen unless the fur is parted, is an inch long, and about the thickness of a thumb; in females and young animals it is covered with hair, but in adult males is quite naked, except a slight tuft at the end; and often covered, as well as all the parts near it, with a yellowish waxy substance.

The musk, which is much better known than the deer itself, is only found in adult males; the females have none, neither has any portion of their bodies the slightest odor of musk. The dung of the males smells nearly as strong as musk, but, singularly enough, neither in the contents of the stomach, nor bladder, nor in any part of the body, is there any perceptible scent of musk. The pod, which is placed near the navel, and between the flesh and the skin, is composed of several layers of thin skin, in which the musk is confined, and has much the appearance of the craw or stomach of a partridge, or other small gallinaceous bird, when full of food. There is an orifice outwards through the skin, into which, by a slight pressure, the little finger will pass, but it has no connexion whatever with the body. It is probable that musk is at times discharged through this orifice, as the pod is often found not half full, and sometimes even nearly void. The musk itself is in grains, from the size of a small bullet to small shot, of irregular shape, but generally a dark reddish-brown color, but when taken out of the pod and kept for any length of time, becomes nearly black. In autumn and winter the grains are firm, hard, and nearly dry, but in summer they become damp and soft, probably from the green food the animals then eat. It is formed with the animal, as the pod of a young one, taken out of the womb, is plainly distinguishable, and indeed is much larger in proportion than in grown-up animals. For two years the contents of the pod remain a soft, milky substance, with a disagreeable smell. When it first becomes musk, there is not much more than the eighth of an ounce; as the animal grows, it increases in quantity; and in some individuals as much as two ounces are found. An ounce may be considered as the average from a full-grown animal; but as many of the deer are killed young, the pods in the market do not perhaps contain, on an average, more than half an ounce. Though not so strong, the musk of young animals has a much pleasanter smell than that of old ones; but

difference of food, climate, or situation, as far as my experience goes, does not at all affect the quality.

From the first high ridge above the plains, to the limits of forest on the snowy range, and for perhaps the whole length of the chain of the Himalayas, the musk-deer may be found upon every hill of an elevation above 8,000 feet, which is clothed with forest. On the lower ranges it is comparatively a rare animal, being confined to near the summits of the highest hills, as we approach the colder forests near the snow ; but it is nowhere particularly numerous ; and its retired and solitary habits make it appear still more rare than it really is. Exclusively a forest animal, it inhabits all kinds of forest indiscriminately, from the oaks of the lower hills to the stunted bushes near the limits of vegetation. If we may judge from their numbers, the preference seems to be given to the birch forests, where the underwood consists chiefly of the white rhododendron and juniper.

In many respects they are not unlike hares in habits and economy. Each individual selects some particular spot for its favorite retreat, about which it remains still and at rest throughout the day, leaving it in the evening to search for food, or to wander about, returning soon after daylight. They will occasionally rest for the day in any place where they may happen to be in the morning, but in general they return to near the same spot almost every day, making forms in different quarters of their retreat a little distance from each other, and visiting them in turn. Sometimes they will lie under the same tree or bush for weeks together. They make forms in the same manner as hares, levelling with their feet a spot large enough for the purpose if the ground is too sloping. They seldom, if ever, lie in the sun, even in the coldest weather, and their forms are always made where there is something to shelter them from its rays. Towards evening they begin to move, and during the night appear to wander about a good deal, from top to bottom of the hill, or from one side to another. The Puharries believe that they come to such places to play and dance with each other, and often set their snares along the edge of such a ledge or precipice, in preference to the forest.

If not walking leisurely and slowly along, the musk-deer always goes in bounds, all fours, leaving and alighting on the ground



together. When at full speed, these bounds are sometimes astonishing for so small an animal. On a gentle slope I have seen them clear a space of more than sixty feet at a single bound, for several successive leaps, and spring over bushes of considerable height at the same time. They are very sure-footed, and although a forest animal, in travelling over rocky and precipitous ground, have perhaps no equal. Where even the burrell is obliged to move slowly and carefully, the musk-deer bounds quickly and fearlessly; and although I have often driven them on to rocks which I thought it impossible they could cross, they have invariably found a way in some direction, and I never knew an instance of one missing its footing, or falling, unless wounded.

They eat but little compared to other ruminating animals, at least one would imagine so from the small quantity found in their stomachs, the contents of which are always in such a pulpy state, that it is impossible to tell what food they prefer. I have often shot them whilst feeding, and found in the mouth or throat various kinds of shrubs and grasses, and often the long white moss that hangs so luxuriantly from the trees in the higher forests. Roots also seem to form a portion of their food, as they scratch holes in the ground, like many of the hill pheasants. The Puharries believe that the males kill and eat snakes, and feed upon the leaves of the "kedar patta," a small and very fragrant smelling laurel, and that the musk is produced by this food. They may probably eat the leaf of this laurel, amongst other shrubs, but from the few occasions upon which I have seen this laurel stripped of any portion of its leaves, it does not appear to afford a very favorite repast. Their killing snakes is doubtless quite fabulous.

The young are born either in June or July, and almost every female brings forth yearly, and often twins. These are always deposited in separate places some distance from each other, the dam herself keeping apart from both, and only visiting to give them suck. Should a young one be caught, its bleating will sometimes bring the old one to the spot, but I never knew an instance of one being seen abroad with its dam, or of two young ones being seen together. Their solitary habits are innate, for if a fawn is taken young and suckled by a sheep or goat, it will not for some time associate with its foster-dam, but as soon as satisfied with sucking, seeks some spot for concealment. It is amusing

to see them suck, all the while they keep leaping up and crossing their fore legs rapidly over each other. They are rather difficult to rear, as many, soon after they are caught, go blind and die.

In most of the hill-states the musk-deer is considered as royal property. In some, the Rajahs keep men purposely to hunt it; and in Gurwhal a fine is imposed upon any Puharrie who is known to have sold a musk pod to a stranger—the Rajah receiving them in lieu of rent.

In some districts they are hunted down with dogs, but snaring is by far the most common method practised for their capture. A few are occasionally shot by the village shikaries when in pursuit of other animals, but the matchlock is seldom taken out purposely to hunt musk-deer, for a hill shikarie does not carry the match lighted, and the deer being generally come upon face to face, almost every one would get away before he could strike a light and apply it to the match. In snaring, a fence about three feet high, composed of bushes and branches of trees, is made in the forest, generally along some ridges, and often upwards of a mile in length. Openings for the deer to pass through are left every ten or fifteen yards, and in each a strong hempen snare is placed, tied to a long stick, the thick end of which is firmly fixed in the ground, and the smaller, to which the snare is fastened, bent forwards to the opening, so that the deer, when passing through, treads upon some small sticks which hold it down, the catch is set free, the stick springs back and tightens the snare round the animal's leg. Besides the musk-deer, numbers of the forest pheasants, moonals, corklass, and argus are caught in these snares; they are visited every third or fourth day, and it is seldom that the owners return without something or other. The polecats often find out the snares, and after once tasting the feast, if not destroyed soon, become a terrible annoyance, tracing the fence almost daily from end to end, and seizing on everything caught; they are often caught themselves, but immediately bite the snare in two and escape. Musk-deer are frequently lost to the snarers in this manner, for when one is eaten by the polecats the pod is torn to pieces, and the contents scattered on the ground. No animal swallows the musk, and when a deer has been killed and eaten by a leopard or other animal, if the ground be carefully examined, much of the musk

may be picked up. Insects and maggots also leave it untouched. I once found what I thought was a newly killed musk-deer, but on examination I discovered it was merely the skin and skeleton of one, which from its dry and withered state must have been dead some months; the flesh had been completely eaten away by maggots, but the musk-pod was entire.

The musk-pods which reach the market through the hands of the native hunters are generally enclosed in a portion of the skin of the animal, with the hair or fur left on it. When they have killed a musk-deer, they cut round the pod, and skin the whole of the belly. The pod comes off attached to the skin, which is then laid with its fleshy side on a flat stone previously heated in the fire, and thus dried without singeing the hair. The skin shrinks up from the heat into a small compass, and is then tied or stitched round the pod, and hung up in a dry place until quite hard. This is the general method of preparing them, but some put the pod into hot oil instead of laying it on a hot stone, but either method must deteriorate the quality of the musk, as it gets either completely baked or fried. It is best both in appearance and smell, if the pod is at once cut from the skin, and allowed to dry of itself.

The musk received from the Puharries is greatly adulterated, and pods are often made altogether counterfeit; and as they are generally sold without being cut open, it is scarcely possible to detect the imposture at the time. I have often seen pods offered for sale which were merely a piece of musk-deer skin filled with some substance, and tied up to resemble a musk-pod, with a little musk rubbed over to make it smell. These are easy to detect, from their being no navel on the skin, it being cut from any part of the body. But the musk is sometimes taken out of real pods, and its place supplied by some other substance, and these are difficult to detect even if cut open, as whatever is put in is made to resemble musk in appearance, and a little genuine added makes it smell nearly as strong. Some have only a portion of the musk taken out, and its place thus supplied; and others have all the musk left in, but something added to increase the weight. Even in the hills where it is produced, so little do the generality of the people know of musk, that I have often seen the Puharries about Gangoutrie sell to the pilgrims, to men from the lower hills, and

even to their own neighbors, small portions of what they called musk, but what was merely some substance resembling it, with a little genuine musk scattered over it. Of this stuff they would sell about a quarter of a tolah for a rupee, or about twenty shillings an ounce.

The substances commonly used for adulteration or to fill the counterfeit pods are, blood boiled, or baked on the fire, then dried, beaten to a powder, kneaded into a paste, and made into grains and coarse powder to resemble genuine musk; a piece of the liver or spleen prepared in the same manner; dried gall, and a particular part of the bark of the apricot-tree, pounded and kneaded as above. The dried paste from which common oil has been extracted, called "peena," is also used, and lumps of this are often, without further preparation, thrust into a pod through the orifice in the skin, to increase the weight. Sometimes no care is taken to give the material employed in filling a counterfeit pod even the appearance of musk. A gentleman once showed me a pod he had bought from a Puharrie at Missouri; on my telling him it was counterfeit, he cut it open, and found it filled with hookah tobacco.—*Pharm. Journ.*, from *Shooting in the Himalayas: a Journal of Sporting Adventures and Travel in Chinese Tartary, Ludac, Thibet, Cashmere, &c.* By Col. Fred. Markham, C. B., 32d Regiment.

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#### ON ANTIMONIAL VERMILION.

By E. MATHIEU-PLESSY.

The author has invented a process which furnishes antimonial vermilion of a beautiful color, and which is sufficiently simple to be employed in its preparation on a large scale.

Hyposulphite of soda is best prepared by the action of sulphur upon sulphite of soda; it is not usually allowed to crystallize. The sulphite of soda must be in the neutral state to avoid the action of the sulphurous acid upon the hyposulphite. The sulphite of soda is most simply and cheaply prepared in the following manner, recommended by Camille Köchlin. In the upper part of a vessel, the bottom of which is broken out, a sieve containing large crystals of carbonate of soda is fixed. Into the

lower part of the vessel projects a furnace-pipe bent at right angles, which is attached to a small clay furnace. Into this furnace sulphur is thrown by little and little, and burns into sulphurous acid, which passes through the tube into the vessel, and there acts upon the carbonate of soda. The combustion of the sulphur may be regulated as occasion requires through the door of the furnace; the draught is quite sufficient, and in the course of three or four days the crystals of carbonate of soda are acted upon to a considerable depth. The very friable sulphite of soda may be readily separated from the unaltered nucleus if any remains, and the latter may then be put back into the sieve. The sulphite of soda is dissolved in water so as to produce a solution of  $25^{\circ}$  B., and this is saturated whilst hot with crystallized carbonate of soda. When effervescence no longer occurs on the addition of this salt (which is the best criterion, as litmus-paper gives no satisfactory indications), or rather when the dilute sulphite furnishes a slight effervescence of carbonic acid on the addition of muriatic acid, flowers of sulphur are added, and the mixture is heated in an earthen vessel for three hours on the water-bath, stirring, and replacing the water that evaporates. When the fluid is cool, it is filtered and diluted until it shows  $25^{\circ}$  B.

Perchloride of antimony is prepared by heating powdered black sulphuret of antimony with commercial muriatic acid. When the evolution of sulphuretted hydrogen begins to diminish at a gentle heat, the mixture is boiled for a few minutes. On cooling, the clear liquid is decanted. To avoid inconvenience from the sulphuretted hydrogen gas evolved during the solution of the sulphuret of antimony, it may either be passed into a solution of soda, or allowed to pass through a tube drawn out to a point at the extremity, close to which the flame of a spirit-lamp is placed; by this the sulphuretted hydrogen is burnt, even when it is mixed with much aqueous vapor. The solution of chloride of antimony obtained is diluted with water to  $25^{\circ}$  B.

When the solutions of hyposulphite of soda and chloride of antimony are thus prepared, the antimonial vermilion is prepared in the following manner:—4 litres of solution of chloride of antimony and 6 litres of water are poured into a stoneware basin, and after these 10 litres of the solution of hyposulphite of soda.

The precipitate which is produced by the water is rapidly dissolved by the hyposulphite of soda in the cold. The basin is now placed in a water-bath which is heated to boiling; in this the temperature of the mixture gradually rises. Towards  $86^{\circ}\text{F.}$  the precipitate begins to form; it is at first orange-yellow, but gradually becomes darker. The temperature is allowed to rise to  $131^{\circ}\text{F.}$ , when the basin is removed from the water-bath, and the precipitate is allowed to settle, which takes place rapidly. The fluid is separated from the precipitate by decantation; the precipitate is washed first with water containing one-fifteenth of muriatic acid, and afterwards with common water, then collected on a filter and dried. In the moist state the antimonial vermilion has a shining red color, but in drying it loses a little of its lustre. It was also produced in the cold, but the process described is more certain and furnishes a finer color.

The author has analyzed the antimonial vermilion thus prepared, and at the same time examined the amount of water in the ordinary orange-red sulphuret of antimony (precipitated by sulphuretted hydrogen). 0.668 grm. of the latter lost 0.038 grm. in weight when heated to  $392^{\circ}\text{F.}$ ; 0.808 grm. of antimonial vermilion showed a loss of 0.0098 grm. when heated to the same temperature. The latter might be attributed entirely to hygroscopic water, and the antimonial vermilion may therefore contain no chemically-combined water. The loss of weight which the orange-red sulphuret of antimony undergoes shows, on the contrary, that this contains water chemically combined, and this loss of weight gives it the composition  $\text{SbS}^3 + \text{HO}$ . The further analysis of the antimonial vermilion was effected by treating a weighed quantity of it with nitromuriatic acid containing an excess of nitric acid. A portion of sulphur remained undissolved, which, after tartaric acid had been mixed with the fluid, and the latter had been diluted with water, was separated, dried, and weighed. The fluid contained the remainder of the sulphur in the form of sulphuric acid, which was determined by precipitation with chloride of barium. The antimony was merely determined from the loss. The result of the analysis was, that the antimonial vermilion consists of 1.1 per cent. of water, 26.7 per cent. of sulphur, and 72.2 per cent. of antimony. As the water is to

be regarded as non-essential, it appears that the compound consists entirely of sulphur and antimony.—*Chem. Gaz.*, March 15, 1856, from *Polytechn. Centralbl.*, 1855, p. 1451.

#### PREPARATION OF THE DEUTOXIDE OF LEAD.

In the *Annalen d. Chemie und Pharmacie*, xiv. 333, Professor Woehler recommends the following process for preparing this deutoxide:

A solution of acetate of lead is precipitated by carbonate of soda and a current of chlorine passed through the mass until all the carbonate of lead has been converted into the dark brown deutoxide, which is then to be thrown on a filter and washed. By operating in this way *all* the lead is obtained as deutoxide, free from chloride; but chloride of sodium is formed, and carbonic and acetic acids set free. The two salts may be taken in the proportion of their weights of equivalents, but it is better to take the carbonate of soda in slight excess, in order to more effectually guard against the formation of chloride of lead. Four parts of acetate of lead gives  $2\frac{1}{2}$  p. of deutoxide, while only  $1\frac{1}{2}$  parts will be obtained from 4 p. of minimum. This deutoxide instantly becomes white in sulphurous acid gas.

Dr. A. Overbeck (*Archiv d. Pharm.* 1856, 5) recommends the following method as simple and economical:

A concentrated solution of 329.6 parts of red cyanuret of potassium and iron is boiled with 47.2 p. of potassa and 112 p. of protoxide of lead in its hydrated state, until the solution has assumed the well known color of (yellow) ferrocyanuret of potassium; the deutoxide is filtered, washed and dried, and the filtrate and washings evaporated to obtain the ferrocyanuret of potassium; the yield will be 368.8 p. of the latter, and 120 p. of the deutoxide. The process may be explained as follows:— $\text{KO} + \text{PbO} + \text{K}_3\text{Fe}_2\text{Cy}_6 = \text{PbO}_2 + 2(\text{K}_2\text{FeCy}_3)$ . This deutoxide is readily heated to redness in sulphurous acid gas, and afterwards forms a purely white mass.

A deutoxide prepared by Woehler's process was found by Muck to contain 1.54 per cent. chlorine, equivalent to 6.03 p. c. chloride of lead; he also could not obtain Crum's test for manganese with this deutoxide (*Wittstein's Vierteljahrsschr.* iv.

546). These statements induced Dr. A. Geuther (*Annalen d. Chem. and Pharm.* 1855, Dec. 382) to examine it, and he found that the deutoxide is obtained pure whether the carbonate of soda used be pure or contain chloride of sodium; in the latter case the acetate of lead must gradually, and under good stirring, be poured into the carbonate of soda. In both cases a deutoxide was obtained wholly soluble in nitric acid under the addition of a little alcohol, and this solution did not show a trace of chlorine to be present when treated with nitrate of silver. Also, Crum's test was obtained by heating some deutoxide with nitric acid, and adding a few drops of some solution of protoxide of manganese previously diluted until sulphuret of ammonium did not render it turbid.

MAISCH.

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ON THE CHARACTERS OF RED WINES ADULTERATED WITH ALUM, AND THEIR APPLICATION TO THE DETECTION OF SMALL QUANTITIES OF THAT SALT INTRODUCED INTO WINE.

By J. L. LASSAIGNE.

The author has found that the aluminous salts, when dissolved in red wines, are partially decomposed with more or less rapidity, according to the temperature at which the operation is carried on. The result of this reaction is the precipitation of a colored compound, formed by the union of the alumina with a portion of the coloring matter of the wine; and this compound, which varies slightly in color according to the kind of wine, is a true lake, such as is produced by alumina with most of the organic coloring principles.

When a red wine is boiled for a few minutes with a very small addition of alum, it gradually becomes turbid, and furnishes a flocculent precipitate, which collects at the bottom of the vessel when the wine is allowed to cool and stand; it forms a completely insoluble lake. This deposit, which may easily be separated by decantation and filtration, presents reactions characteristic of the color derived from the wine itself; when calcined in contact with the air in a platinum crucible, it leaves a tolerably abundant, white, pulverulent residue, presenting all the characters of anhydrous alumina.

Pure red wines, without any addition of aluminous salt, are



not rendered turbid even by long boiling ; and besides, the deposit which they may sometimes furnish under these circumstances, would not present the composition above indicated. The author adds, that by this simple process, potash or ammoniacal alum may be quickly detected in wines containing one one-thousandth, one two-thousandths, or even one three-thousandths of these salts.—*Chem. Gaz.*, April 1, from *Comptes Rendus*, Feb. 25, 1856, p. 410.

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## ON THE OXYPHENIC ACID OF WOOD-VINEGAR.

By MAX BUCHNER.

Pettenkofer found that wood-vinegar contains an acid, which from its properties might be taken for pyrogallic acid. At his instigation A. Pauli investigated this body, and found that it was distinct from pyrogallic acid. The author has continued this investigation, and found that it is identical with phenic acid, pyromoritanic acid of Wagner, and pyrocatechine of Reinsch and Zwenger.

Wood-vinegar is evaporated to the consistence of a syrup, and the residue agitated with a saturated solution of chloride of sodium, in order to separate the tarry constituents. The benzoic acid remains in the solution, and is extracted therefrom by ether, which is shaken with the solution. The ethereal stratum is drawn off, and the ether got rid of by distillation.

The residue is now further distilled, whilst a current of carbonic acid is passed through the apparatus. Various distillates are obtained. The first still contains some ether, together with acetic acid ; it is nearly colorless. The second is a reddish-yellow, rather thinly fluid-oil ; it contains the principal part of the required acid. The third is a brown oil, in which there is still some acid, which however does not crystallize.

The second distillate, collected until the brown oil begins to pass over, sets into a crystalline jelly, which is purified. The crude wood-vinegar contains from 0.1 to 0.2 per cent. of this acid. Its amount is determined by adding potash to the wood-vinegar, and allowing oxygen to be absorbed by the fluid. 10 milligrms. of oxyphenic acid absorb 3.7 cub. centims. of oxygen at 32° F., and with a barometric pressure of 760 millims.

The acid may also be obtained directly from the wood-vinegar without previous evaporation by agitation with ether. The mixture is then left to separate, the ether is distilled off, and the residue agitated with a saturated solution of chloride of sodium. The oil separates completely from this solution, and the acid is afterwards extracted from the solution by repeated agitation with ether. If the ether be then distilled off, a fluid remains, from which the acid separates in crystals. The acid may also be obtained from the residue by sublimation in a current of carbonic acid.

The acid thus produced crystallizes in very lustrous laminae, belonging to the rhombic system; it fuses at  $231^{\circ}\text{F.}$ , and volatilizes even at its melting-point; the vapor provokes sneezing. It has exactly the reactions of oxyphenic acid. Analyses:—

|   | I.    | II.   |    |       |
|---|-------|-------|----|-------|
| C | 68.26 | 68.39 | 12 | 65.45 |
| H | 5.91  | 5.96  | 6  | 5.46  |
| O | 25.47 | 25.65 | 4  | 29.09 |

The analyses are,—I., of acid fused in a porcelain tray; II., of acid sublimed and fused.

The author explains the excess of carbon and hydrogen by the adhesion of a little hydrocarbon to the acid. The lead-salt A, dried at  $212^{\circ}\text{F.}$ , contained 70.08 per cent. of oxide of lead; the salt B, dried at  $239^{\circ}\text{F.}$ , contained 71.76 per cent. of oxide of lead. The analyses of these salts gave—

|     | A.    |       | B.    |       |    |       |
|-----|-------|-------|-------|-------|----|-------|
| C   | 22.60 | 22.23 | 22.13 | 22.78 | 12 | 22.78 |
| H   | 1.58  | 1.48  | 1.39  | 1.27  | 4  | 1.27  |
| O   | 5.74  | 6.21  | 4.72  | 5.06  | 2  | 5.06  |
| PbO | 70.08 | 70.08 | 71.76 | 70.89 | 2  | 70.89 |

The author considers it not improbable that this acid may be produced from carbolic acid during the dry distillation of wood. It always accompanies the products of the dry distillation of wood, but does not occur in coal-tar.—*Chem. Gaz.*, March 15, from *Leibig's Annalen*, xcvi. p. 186.

## ON SOME REACTIONS OF OXALIC ACID.

BY J. W. SLATER.

The decomposition of certain chlorides and nitrates by oxalic acid has been lately studied. It decomposes in like manner the fluoride of calcium very readily, hydrofluoric acid being evolved as if the fluor spar were treated with strong sulphuric acid.

Oxalic acid decomposes the phosphates of iron, silver, zinc and copper, and the arseniates of iron, silver and copper. In all these cases the arsenic or phosphoric acid is set free, with formation of the corresponding oxalate.

It dissolves the sulphurets of iron and manganese, but not those of zinc, cadmium, uranium, cobalt, mercury or copper. This reaction may be employed for the quantitative separation of iron and manganese from zinc and cobalt.

Oxalic acid decomposes most of the chromates, though in no case is chromic acid liberated. The chromate of zinc is first dissolved, forming a yellow solution. On standing, or more rapidly on the application of heat, the solution becomes turbid, oxalate of zinc is deposited as a white powder, whilst oxalate of chrome remains in solution. The chromates of bismuth, baryta, mercury and lead are all immediately decomposed by oxalic acid without previous solution. The chromate of lead is scarcely affected if it has been strongly dried.

Chloride of antimony is decomposed by strong solution of oxalic acid. The precipitate is free from chlorine. It is only very slowly decomposed by boiling water. Glass in fine powder is readily attacked by oxalic acid. Oxalate of lime and oxalates of alkali are produced, and silica is set free. Silica does not appear to dissolve in oxalic acid under any circumstances. A variety of minerals are more or less rapidly acted on by oxalic acid, yielding products that still require examination. The influence of the lichens containing oxalic acid is probably very important in effecting the disintegration and decomposition of rocks, this acid being, as we know, capable of attacking almost every class of saline compounds.—*London Chem. Gaz.*

## ON THE COMPOSITION OF THE MUSCLES OF ANIMALS.

BY MM. VALENCIENNES and FREMY.

As in their investigation of the eggs of animals, the authors have examined the muscular fibre of creatures of different orders. The fibres were freed as far as possible, by anatomical means, from aponeurotic fibres, nerves, blood vessels, fat, &c.

In the analysis of the muscles of the vertebrate animals, they found the principal constituent to be *creatine*. Besides this they contained inosinic acid and creatinine. Here, therefore, they effected nothing more than a confirmation of the researches of Chevreul and Liebig. Creatinine, however, appears to be more generally diffused in the animal kingdom than was supposed, for it occurred in the muscles of all the Vertebrata; sometimes it was met with in a free state, when it was recognizable by its alkaline reaction, and sometimes it was combined with phosphoric acid.

The body which communicates to the muscles their acid reaction is, in some cases at all events, lactic acid; but the strong acid reaction of the muscles is usually caused by the presence of acid phosphate of potash,  $\text{KO}, 2\text{HO}, \text{PO}^5$ . This salt is obtained by extracting the muscles with weak alcohol, and evaporating the solution to the consistence of a syrup, when the salt crystallizes.

The quantity of this salt in the muscles appears to stand in connection with the formation of bone. It was always found in considerable quantities in those animals which possess greatly developed bones, but in very small amount in the Articulata and Mollusca. It is easy to see that this salt may be of importance in the formation of bone, as direct experiments showed that this solution converts carbonate of lime into phosphate.

This phosphate also appears to be not without influence on the production of a phosphuretted fat which is contained in the muscles. The muscles of vertebrate animals contain a considerable amount of fat, which consists of variable quantities of oleine, margarine and stearine. Together with these neutral fats another occurs, which in its general properties is distinct from the neutral fats. It is obtained by extracting the muscles with weak alcohol, which does not dissolve the ordinary fats. If

this alcoholic solution be evaporated, the residue is a sticky mass of an amber-yellow color, which is completely soluble in water. When treated with sulphuric acid, it is decomposed in the manner of a soap; the result is sulphate of soda and an acid which is heavier than water. This acid contains phosphorus and nitrogen, and has the same composition as Fremy's oleophosphoric acid. The phosphuretted fat of the muscles is therefore the same as that of the brain, and it is diffused in the most various parts of the organism; it diminishes in quantity with age, and varies according to the species of animal.

Thus, the fishes with soft white flesh, such as the carps, plaice and flounder, contain but little of it; whilst those with a compact flesh, with a distinct taste, which are generally difficult of digestion, such as the herring, mackerel, trout and especially the salmon, contain it in considerable quantity. It is to this phosphuretted fat that these fishes are indebted for their characteristic flavor.

In the examination of the muscles of these fishes, the authors were led to investigate the coloring matter of the muscles, which is so remarkable in the salmon, the salmon-trout, and some other species. This coloration stands in determinate relation to the reproduction, for the salmon has red flesh throughout the year, but it becomes paler at the spawning season; and this change of color is still more distinct in the trouts, the flesh of which becomes perfectly white at that period.

As the fishes do not all spawn at the same time, and the females have a stronger salmon color and retain it longer than the males, it follows that we may obtain from the same water trouts with white or salmon colored flesh. From this it follows also, that the salmon trout is not a hybrid between the salmon and the trout, which moreover cannot well be the case, as the salmon spawns in July, rarely even in August, and the trout in December.

The coloring matter of the flesh of the salmon has already been mentioned by Davy in his "Salmonia." He states that the muscles of the salmon may be deprived of their color by ether. The authors have found that this coloring matter consists of a fat, which possesses the properties of a weak acid, and is dissolved in a neutral fat. The authors call this body

*Salmonic Acid*.—It is obtained from the expressed oil of the muscles of the salmon, by shaking it with alcohol containing a little ammonia. This fluid readily takes up the coloring matter, the ammonia is then neutralized by an acid, the ammoniacal salt is allowed to separate, and the coloring matter is obtained in the form of a sticky red acid, which possesses all the properties of a fatty acid. The salmon-trout furnishes the same acid as the salmon.

It occurs in considerable quantity, mixed with oleophosphoric acid, in the spawn of the salmon, which accounts to a certain extent for the loss of flavor in the flesh of the salmon during the spawning season. Different species contain different quantities of salmonic acid; thus the *Salmo hamatus*, Val., contains less than the *Salmo Salmo*.

The muscles of the Crustacea appear to be more simple in their composition than those of the Mammalia (Vertebrata?) the phosphate of potash is generally deficient, but on the other hand, the oleophosphoric acid is present in as great proportion as in the muscles of fishes. Creatine and creatinine were also obtained from several species.

*Muscles of the Mollusca*.—With these also the authors took great care to obtain them free from all other tissues and products of secretion. They examined the fibres of Cephalopoda (*Sepiæ*) and Acephala.

The composition of these fibres is much less complex than in the Vertebrata. They contain only inconsiderable quantities of acid phosphate of potash, oleophosphoric acid, creatine and creatinine. Instead of the latter, it is remarkable that they found taurine. They detected this body, not only by its properties, but also by its elementary analysis. Senarmont determined the crystalline form of this taurine, and found it to be identical with that of taurine from the bile. The authors obtained taurine both from the muscles of *Sepiæ* and of the oyster. This occurrence of taurine is very remarkable, and certainly proves that it is not a product peculiar to the bile.—*London Chem. Gaz.*, from *Journ. de Pharm. et de Chim.*

A NEW METHOD FOR DETECTING THE PRESENCE OF SULPHUR  
IN HOPS.

By DR. RUD. WAGNER.

The question, whether or not a sample of hops has been treated with sulphurous acid during the drying, is one of more than ordinary difficulty to decide.

The brewers of Bavaria pour water on a handful of the hops, and place in the mixture a silver spoon, and imagine that if the hops have been sulphured, black stains of sulphuret of silver will be produced on the spoon.

This test is a very uncertain one, and scarcely succeeds once in ten times. A comparatively very large amount of sulphurous acid is required in order to produce a stain of sulphuret on the surface of the silver, in which case it can be detected better by the smell than by any chemical test. Now when it is considered that commonly 1 lb. of sulphur is used to 2 cwts. of hops, that fully a fourth of this quantity remains unburnt, that more than half of the sulphurous acid escapes into the atmosphere, owing to the method employed, it will be seen how small a proportion of sulphurous acid is efficaciously applied.

This small proportion of sulphurous acid can only be discovered by the silver-test when the hops have been sulphured a short time previous to its application (eight to fourteen days;) and in this case an observable stain of sulphuret only appears when the mixture of hops and water has been left to itself at a moderate temperature for several days, when, in consequence of the fermentation which takes place, the sulphurous acid is reduced to sulphur. To an opinion recently put forth, that metallic silver was capable, in the absence of organic matter, of converting sulphurous acid into sulphuric acid and sulphur, the author can by no means assent, as he has convinced himself by experiment, that metallic silver may remain in contact with a very dilute watery solution of sulphurous acid for a fortnight, without the smallest stain of sulphuret appearing on its surface.

An examination with a magnifying lens, in order to ascertain from the form and color of the lupulin, whether the hops have been sulphured, is no longer possible in the present condition of the hop trade of Bavaria, where the hops are not treated with

sulphur for any dishonest purpose, as seems to be the opinion in North Germany, but merely to improve their keeping qualities, and render them more fit for exportation.

The author has tried the method proposed by Dr. Heidenreich, of Ansbach upwards of three years ago, and employed it in numerous instances in judicial proceedings. According to this, twenty or thirty of the cones of the hop are placed in a flask with zinc and muriatic acid, and the hydrogen evolved passed through a solution of acetate of lead; if the hops contained sulphurous acid, sulphuretted hydrogen is produced, and causes a dark brown precipitate of sulphuret of lead.

This process is satisfactory when the hops have been sulphured within a few (three to four) weeks, but is not sufficiently delicate when the object is to detect a minute trace of sulphur.

The author has effected an improvement on Heidenreich's method. It now affords us a means of detecting sulphurous acid, not only in hops, but also in all other substances, such as wines, bleached silk, &c., even when it exists in such minute quantity as to escape detection by any other method.

The test is founded on the fact, that a solution of nitroprusside of sodium is colored a magnificent purple by the smallest trace of an alkaline sulphuret, such as sulphuret of potassium or ammonium.

In the employment of the test, a solution of nitroprusside of sodium, so dilute as to appear of a very light brown color, is placed in a beaker, and a few drops of solution of caustic potash added. The process is now conducted as in Heidenreich's method. The hops under examination are placed in a flask with a piece of sheet zinc, diluted muriatic acid poured over them, and the gas conducted into the solution of the nitroprusside. If the gas contain but a minimum of sulphuretted hydrogen, the first bubble causes a violet cloud in the solution; after passing the gas for a short time, it assumes the magnificent color of the solution of permanganate of potash. The vapor of muriatic acid passing over with the gas, does not affect the reaction unless it be continued too long. It will be readily understood that the gas should not be washed; at most it should be filtered through cotton-wool.



In hops which have been sulphured, it is impossible to detect the sulphur after a few months.

This test for sulphurous acid is not only one of the most delicate in the whole range of analytical chemistry; it is also one of the simplest and most beautiful.—*London Chem. Gaz.*, from *Kunst. und Gewerbeblatt für Bayern*.

## ON THE PREPARATION OF SUCCINIC ACID FROM MALATE OF LIME.

By E. J. KOHL.

In the preparation of succinic acid from malate of lime, which is obtained from the juice of the berries of the mountain ash, succinate of lime is not always obtained, but sometimes butyrate and sometime lactate of lime, with a larger or smaller quantity of succinic acid. The author has ascertained the conditions under which a favorable result may be obtained in the formation of this acid in the fermentation of malate of lime.

1. *Preparation of the Malate of Lime*.—The malic acid is obtained from the berries at the period when they begin to turn red; at this time they furnish the largest quantity of acid. The expressed juice of the berries is evaporated to half its volume, and then perfectly clarified by straining through a pointed bag, which is best made of flannel. The dark red fluid thus obtained is heated to boiling, and nearly saturated with milk of lime, purified by straining through a sieve: the point of saturation is indicated by the dark reddish-brown color of the fluid. If too much lime be added, the fluid appears blackish-green; but this error may be corrected by a further addition of juice, for which reason it is as well to keep some of it back. The boiling is continued until the fluid is almost of the thickness of a syrup, when the malate of lime separates in a crystalline form; this is taken out with a perforated spoon, and put into a vessel in which a stage can be fixed at a greater or less elevation, according to the quantity of the malate of lime, to allow the fluid to drain away. The salt is washed in this vessel by mixing it with water and allowing it to settle, until the fluid, which at first is reddish-brown, runs away almost limpid. This is necessary for the success of the operation, and the loss thus occasioned is of no con-

sequence, as it only amounts to 0.67 per cent. The salt thus obtained is pressed, and the quantity of fluid still contained in it is determined, so as afterwards to calculate its dry weight. If the berries employed be too ripe, only a very small quantity is obtained, and this of indifferent quality.

2. *The Ferment*.—The best ferment was always putrid caseine, but it is not a matter of indifference at what stage of putridity the caseine is. Caseine which had been pressed into a pot and kept for one and a half to two years covered with several layers of blotting-paper, gave the best results.

3. *The Fermentation*.—The washed malate of lime is stirred up with three times its weight of cold or warm water of about  $77^{\circ}$  to  $86^{\circ}$  F., in large stone pots or tubs, and to each pound of the dry lime salt, 1 oz. of caseine of the above properties, triturated with water, is added; the vessel is then placed where it will be exposed to a temperature varying day and night between  $51^{\circ}$  and  $72^{\circ}$  F. The evolution of carbonic acid very soon indicates the commencement of fermentation, which takes place slowly. If this goes on in the way required for the formation of succinic acid, an excessively disagreeable odor of rotten cheese is evolved. If this disappears at once, we may conclude that other products are being formed; if after once disappearing it recommences, we may be certain of the formation of succinate of lime, although in this case a loss will take place, which, however, is often very inconsiderable.

In from eight to fourteen days, or sometimes longer, during which the mixture must always be stirred every day, the fermentation is complete, and the succinate of lime formed is deposited partly in fine needles, and partly united into crusts. When once the formation of succinate of lime is completed, the mixture remains without formation of any other products except those already mentioned, which are produced in small quantities even for years. The succinate of lime thus obtained is repeatedly washed in water, and pressed; a sample is then dried upon the water-bath, so as to determine the dry weight of the whole. If it be in crusts of too large size, they must previously be broken up. This operation stands in direct relation to the

4. *Preparation of the Succinic Acid*.—For the decomposition of the succinate of lime, 50 parts of sulphuric acid are employed

to 100 parts of salt. The crude succinate of lime is stirred up with water to form a thick paste, and the necessary quantity of hydrated sulphuric acid is added by degrees, with constant stirring, during which there is of course a great evolution of heat. When the effervescence caused by the intermixture of carbonate of lime has ceased, the paste is diluted with three or four times as much water as the expected result in succinate of lime employed, which furnishes nearly one-third of its weight of acid; and the whole is digested until the completion of the decomposition, which is indicated by the formation of a homogeneous mass. The brown solution of the acid is filtered away from the sulphate of lime through a pointed bag; the sulphate of lime is freed as much as possible from adherent acid by repeated diffusion in water and filtering, and then the fluid is evaporated to dryness. If a slight excess of sulphuric acid be not already present, this addition is made, and the mixture is put into a wide-necked retort; the neck of the retort must be short, with a loosely-fitting receiver, and the body of the retort surrounded with sand to a considerable height. When the acid melts, water is first condensed into the receiver; but as the acid reaches the boiling-point, it passes over in oleaginous drops, which solidify both in the neck of the retort and in the receiver. If the acid passing over, which is to a certain extent anhydrous, comes in contact with the water previously condensed in the receiver, so great an evolution of heat is produced that the mass appears to boil; it must then be cooled. The more carefully the fire is regulated, the whiter is the product. A second receiver may be substituted as soon as the acid begins to pass over. The sublimation is continued until at a high temperature white vapors begin to appear in the retort. The carbonaceous residue may easily be removed from the retort, so that the latter may be employed again for many operations. The receiver, however, is generally destroyed, as the acid contained in it cannot be got out without breaking it to pieces, unless it be desired to have it crystallized, when water may be employed. The white or yellowish acid thus obtained, broken into fragments, is heated in a suitable vessel on the water or sand-bath, until all the sulphurous acid which is produced during distillation, as well as the adherent moisture, is entirely dispelled. If it be desired to prepare the medicinal, and not a chemically

pure acid, 1 drm. of *oleum succini rectificatum* is added to every pound of the dry acid, mixed with it most intimately by trituration, and again sublimed. The product of the sublimation, or the mixture of oil and acid, is dissolved in 2 parts of boiling water, filtered, and set to crystallize. To procure chemically pure acid, the whitest is selected, and treated in the known manner.

From the preceding statements it appears that the officinal acid may also be obtained directly by the simple sublimation of the crude acid impregnated with the oil of amber.

*Pure succinic acid* is obtained from the crude product in crystals similar to those of sulphate of quinine. The retort is immersed in the sand not deeper than it is filled with the mixture of succinic acid with a little sulphuric acid. This must not fill more than one-fourth of the retort. As soon as the dome and the entrance of the neck of the retort are covered with beautiful dendritic crystals, which, however, must reach down nearly to the middle of the retort, it is allowed to cool slowly. The whole belly of the retort is then found filled with this beautiful preparation down to the solidified unsublimed portion. The retort is destroyed, as the lower portion, containing the fused crude acid, must be broken away in order to procure the crystalline acid, which, when spread upon bibulous paper, is heated to expel the sulphurous acid and moisture.

The process, according to the author's experience, is the shortest and most certain. The purification of the crude acid by repeated crystallization, and decoloration by pure animal charcoal, takes up a great deal of time and causes a considerable loss; in the first case the crystals always become covered with a somewhat resinous coat, which spoils their appearance, and can scarcely be got rid of without the employment of animal charcoal.

5. *Metamorphoses of Malate of Lime*.—It is of great importance that all sugar should be washed out of the malate of lime before it is exposed to fermentation. If the salt contain sugar, it produces first of all lactate of lime, and, according to the duration of the process, and the mode in which it is carried on, metacetonate, butyrate, and acetate of lime.

In the complete conversion of malate into succinate of lime, the only subordinate products are carbonate and acetate of lime.

That an incomplete change with formation of lactic acid, and secondarily of bodies produced from this, is caused by the presence of sugar in the malate of lime, is proved by the circumstance, that when grape-sugar is added to pure malate of lime before the fermentation, the result is lactate of lime, and when the action of the ferment is continued longer, it is principally metacetonate of lime, &c. According to this, it is in the power of the experimenter to produce one or other of these bodies at pleasure. The extremely bad odor of the most putrid caseine already mentioned, soon gives place to that of lactic acid when sugar is present, and is not again perceptible if the latter be in sufficient quantity. The base with which the lactic acid first combines is the ammonia produced from the caseine.

*The caseine*, which serves as a ferment in this process, is prepared as above described. It is frequently kneaded, until at last it forms a brownish, perfectly homogeneous mass, of not the most pleasant odor. This mass exhales considerable quantities of ammonia. If caseine in the above condition be mixed with sulphuric acid, a slight odor of butyric and acetic acids is evolved on the application of heat; whilst that of metacetic acid is very distinctly perceptible. It is clear that these acids are combined with ammonia in the putrid caseine, as solution of potash, especially when hot, sets free a considerable quantity of ammonia. When the caseine has acquired the above properties, and the fermentation of the malate of lime has been effected under the above conditions, the desired product, succinate of lime, is obtained, together with the collateral products already mentioned. The metacetic, butyric, and acetic acids present in the caseine, combined with ammonia, are evidently the last members of the series of lactic acid formed from sugar of milk. The decomposition of the former into butyric and acetic acids by the further action of the ferment is extremely probable; and the author proposes to investigate these matters more closely.

Quite a different result is obtained in the fermentation of malate of lime when fresh caseine is employed. This still contains sugar of milk, and the lactic acid formed from it. Half-way between the fresh and putrid caseine stands that which is employed in domestic economy in the manufacture of cheese. This combines the properties of both. According to the degree

to which putrefaction has gone, more or less succinic acid, or of the other products, is obtained by its action upon malate of lime. —*Chem. Gaz.*, March 15, from *Archiv der Pharm.*, cxxxiv. p. 257.

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### ON THE EMPLOYMENT OF SULPHURET OF CARBON FOR INDUSTRIAL PURPOSES.

By E. DEISS.

The author commences by stating, that in 1840, the price of sulphuret of carbon was as high as from 50 to 60 francs the kilogramme, but that soon afterwards he reduced its price so greatly that in 1848 he sold it at 8 francs the kilogramme, for the purpose of vulcanizing india-rubber. At present, with an apparatus composed of three retorts, he is able to manufacture the immense quantity of 500 kilogrammes of sulphuret of carbon in twenty-four hours; although scarcely a year ago, with the same furnace, the same retorts, and the same amount of fuel, he could only produce 150 kilogrms. in the same time. The product now costs him only 50 centimes the kilogramme, and he has no doubt that, by operating on a larger scale, it might soon be sold at 40 francs per 100 kilogrms. As, however, this substance has at present only a very limited employment in the vulcanization of india-rubber, the author having a large quantity on his hands, naturally desired to find some other purpose to which it might be applied; and considers that he has discovered one of the greatest importance, namely, the extraction of fatty matters.

He states that Paris daily produces 30,000 kilogrms. of bones, which are collected by the *chiffonniers*, and carried to the manufactories of ivory-black and gelatine. Here they are sorted, some being devoted to the production of ivory-black, others of gelatine, whilst some are sold to the workers in bone. The greater part of them (25,000 kilogrms. daily) are employed in the manufacture of ivory-black; but these undergo a preliminary treatment for the extraction of their fatty matter. The bones are broken and boiled with water for about three hours in large cauldrons; the fat floats on the surface and is skimmed off; the bones are taken and thrown into a heap, to undergo a kind of

fermentation, in which the production of heat induces a state of desiccation which fits the bones for calcination.

In these operations the bone undergoes a great alteration: the long boiling in water dissolves a great portion of the gelatine, which is necessary for the production of a good black; and the fermentation and long exposure to the air causes the almost total destruction of the animal matter, so that a bad black is produced for the sake of only 5 or 6 per cent. of fat.

The author states that much more advantageous results may be obtained by the employment of sulphuret of carbon. He proposes to crush the bones almost to powder; then to treat them with this agent, which almost instantly dissolves all the grease contained in them; and from this it may be separated by distillation, which is greatly facilitated by the low temperature at which this fluid boils, and the ease with which it may be condensed. The quantity of grease thus obtained is 10 or 12 per cent., and it is superior to that procured by boiling.

He adds, that the same agent may be applied to the extraction of oils from oleaginous seeds and of the grease from wool. In the latter case, the grease extracted becomes a useful product; it is a butyraceous substance, adapted for the manufacture of some kind of soap.—*Chem. Gaz.*, April 1, 1856, from *Comptes Rendus*, February 4, 1856.

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#### TEST FOR CARBONATE AND IODATE OF POTASH IN IODIDE OF POTASSIUM.

Ry MR. WILLIAM COPNEY.

That substances used in medicine should be absolutely pure, however desirable, is not always practicable; that they should, however, be of such a degree of purity as not to affect their uses, is imperative.

Iodide of potassium is one of those preparations which, in the present Pharmacopœia, are consigned to the list of the *Materia Medica*, no formula being given in the part appropriated to "preparations and compounds," "inasmuch as"—it is stated in the preface—"we have these medicines so adapted to our use, that we have no occasion to prepare them ourselves;" a statement, it may be observed, somewhat refreshing after the whole-

sale declarations which have recently been put forth about the adulteration of drugs and chemicals.

In this notice all mention of impurities other than the above is omitted. Although the great bulk of iodide of potassium, prepared for medicinal use, is sufficiently pure to be "adapted" for medical purposes, it rarely happens that it is entirely free either from carbonate of potash or iodate of potash, or both. The manufacturer has a difficulty to perform—to produce an article not only pure, but in well-defined crystals and free from color. A compound consisting of nothing more than iodine and potassium, united in their equivalent proportions, is not very stable in respect of color; being somewhat hygroscopic, water as well as carbonic acid is absorbed from the air, hydriodic acid and carbonate of potash are formed, and the salt acquires a yellow tinge, a change which is the more noticeable if it be in a state of powder, in which form it is used in some establishments, having been prepared by the purification of the commercial article, the solution thus obtained being evaporated to dryness.

In purchasing the salt, although it may be always expected that the bodies before mentioned will be present, it is of course desirable to select the sample which contains them in the smallest proportion—any test which shall enable us to do this quickly and with certainty, may not be unwelcome.

The reaction on litmus paper, effervescence with a dilute acid, turbidity of the solution with chloride of barium or lime water (which, when "slight," according to the late Mr. Philips, "need not be noticed"), and the formation of a bluish precipitate with protosulphate of iron,—indicating potash or its carbonate; and dilute hydrochloric acid for the iodate, really leave little to desire. The protosulphate of iron, although an excellent test—the most delicate of those enumerated—has not the advantage of the chemical constitution and relationship possessed by the compound now proposed—the protiodide of iron, in the form of the recently and carefully prepared *Syrupus Ferri Iodidi P. L.*

The usual precautions as to equal quantities and similar circumstances being observed, a drop of the syrup is to be added to each sample dissolved in distilled water; a bluish precipitate is, in most cases, formed at once, which retains this color for some little time—the peroxidation of the iron being somewhat retarded by



the small quantity of sugar present. If iodate, however, be present, the precipitate becomes red almost immediately. The samples under examination are set aside, oxidation proceeds, and the precipitates subside; the relative quantity of each is noticed and registered accordingly. If, in the use of this test, iodate is suspected, it may be subsequently shown more distinctly by means of the usual test of hydrochloric acid.

To establish the trustworthiness and value of the test now proposed, some iodide of potassium was prepared as pure as possible; to a solution of this a drop of the test was added—no change occurred, nor was there any indication of a precipitate after standing twenty-four hours. One drop of a solution, containing one grain of carbonate of potash dissolved in a thousand grains of distilled water, was now added, and a pale blue precipitate ensued. A second specimen was prepared, containing both carbonate and iodate of potash; on adding the test first a deeper and then a red precipitate was formed. A third, containing iodate only, was now made—the test being added, a red precipitate formed immediately.—*Pharmaceutical Journal*, May, 1856.

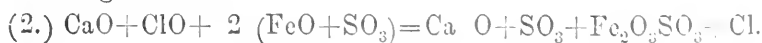
#### VALUATION OF CHLORIDE OF LIME BY MEANS OF SULPHATE OF IRON.

Wittstein and Claude have made some comparative experiments on the valuation of bleaching powder, and have come to the conclusion that the reaction with sulphate of iron is not capable of affording accurate results. The reaction is supposed to be—

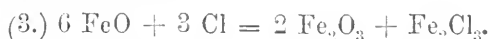


However, in making the experiment, there is always an evolution of chlorine, even before the whole of the protoxide of iron is converted into peroxide. Moreover, by comparing the results obtained by the valuation with sulphate of iron and those obtained with arsenious acid, the latter always gives higher percentage.

The evolution of chlorine is owing to the reaction being of the following nature:—



Supposing that the chlorine were at once completely evolved, seventy-eight parts of sulphate of iron would correspond with twenty of available chlorine. This, however, is not the case, because the liberated chlorine does not escape entirely from the solution so long as protosulphate of iron is present, but abstracts iron forming perchloride.



The smaller the quantity of chloride of lime that comes in contact with the sulphate of iron in a given time, the more perfect is the conversion of this liberated chlorine into perchloride of iron, but towards the end of the experiment there is always an escape of chlorine, because the quantity of protoxide of iron is then very small.

It follows, therefore, that although a given quantity of chloride of lime will oxidize much more protosalt of iron than is supposed to be in the equation (2), still it is impossible to oxidize four equivalents by means of one equivalent of hypochlorite. It is obvious that the loss of chlorine which takes place in this manner, varies according to the circumstances of the experiment.—*Ibid*, from *Vierteljahresschrift für Prakt. Pharmacie*, iv., 555.

## PREPARATION OF NEUTRAL SULPHATE OF ATROPIA. ➤

By M. CH. MAITRE.

Take of crystallized atropia 10 grammes, (154·3 grs.,) dissolve in it a sufficient quantity of perfectly pure ether free from water, and of the sp. gr. 66° Baumé. Then prepare a mixture of pure sulphuric acid and alcohol of 40° Baumé in the proportion of one gramme (15½ grs.) of acid to 10 grammes of alcohol, and throw the mixture drop by drop into the solution of atropia. The liquid loses its transparency, becomes milky and deposits on the sides of the vessel a voluminous precipitate having a viscid appearance. When this precipitate ceases to form, the supernatant ether is decanted and the vessel containing the residue put in the drying closet. The sulphate of atropia soon dries completely, and is presented in the form of a white powder, perfectly neutral, very soluble in water, and precipitates chloride of barium abundantly.

For this process to succeed well, it is necessary to operate at the lowest possible temperature, and to use the solvents carefully freed from water, to which end their strength should be carefully verified, and the sulphuric acid should be monohydrated, (66° Baumé.) Finally, the operator should use litmus paper, so as to avoid an excess of acid, and to be able to control the neutrality, a portion of the ethereal solution of atropia should be reserved and used to restore the neutral condition of the liquid.—*Repertoire de Pharmacie.*

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## REMARKS ON HASCHISCIN AND ITS PHARMACEUTICAL APPLICATIONS.

BY M. J. LANEAU,

Chief Pharmacien to St. John's Hospital at Brussels.

It is known that haschisch and haschiscin were first employed in the East for epidemic cholera. Lately, haschiscin having been used with some success in the treatment of cholera patients at the Hospital of St. John, by Dr. Victor Uytterhoeven, I propose to make known some new facts relative to its chemical history and to the manner of prescribing it.

Haschiscin, or cannabin, is the active principle of Indian hemp, *Cannabis indica*, a plant of the natural order Cannabineæ. It possesses narcotic properties very decidedly, and similar in all respects to those that characterize the flowering summits of the plants and the different preparations known to the Orientals, under the names of *haschisch*, *malach*, *madjoud*, *der-vanesk*, *gunjah*, *cherrus* and *cherris*. To obtain haschiscin with the proper qualities, it is necessary to use hemp that is grown in countries where the climate causes the development of this principle, which is not the case with the hemp of temperate climates.

M. Gastinel, pharmacist at Cairo, has suggested a simple process for the preparation of haschisch. With the dried plant he makes an alcoholic extract, which is then treated with water to free the resinous principle from extractive and other matters, when it is dried.

The author believes it to be more eligible to operate directly

on the powdered hemp tops in a displacement apparatus, with a mixture of alcohol and ether or chloroform. The solvent can be regained by distillation, and serve for a subsequent operation. The residue collected and dried ought to constitute the same substance as that obtained by M. Gastinel.

The active principle of hemp being a fixed substance, there is no fear of submitting the plant to distillation, as it is well known that water distilled from hemp possesses none of the narcotic or excitant properties of the plant.

Haschiscin,\* as obtained by Gastinel's process, is a complex product, dry, extract-like and resinoid, of a deep green color, with a sweetish taste without any bitter after-taste. Having found different results from those published in reference to its solubility in alcohol, the only menstruum indicated, I have sought those menstrua in which it is soluble *in the cold*, which at the same time present a therapeutic interest.

Haschiscin is insoluble, in the *cold*, in alcohol of 80 to 90 per cent.; it dissolves with heat, but a notable quantity of resin separates by cooling.

It is soluble in the cold, in all proportions, and more or less promptly, in alcohol of 80 or 90 per cent. containing one-third of ether 56° B., in absolute alcohol, rectified ether, acetic ether, sweet spirit of nitre, chlorohydric and chlorinated chlorohydric ethers, in chloroform and in sulphuret of carbon.

It dissolves with the same facility, in the cold, in the essential oils, both the hydrocarbons, oil of turpentine, lemons and juniper, in the oxygenated oils mint, cinnamon, chamomile and lavender, and in the sulphuretted oils, such as that of mustard.

The fixed oils, as those of olives and almonds, dissolve it almost entirely, aided with heat and retain it on cooling.

Subjected to incineration, haschiscin leaves very little ashes.

\*The cannabin or pure hemp resin is a purer product than the haschiscin of Gastinel. It is obtained by the Messrs. Smith of Edinburg, by treating the gunjah or hemp tops with repeated effusions of water till exhausted, then with a solution of carbonate of soda, after which it is washed with water and dried. After being thus deprived of inert matter, the hemp is exhausted with alcohol, the tincture treated with milk of lime, (1 lime to 12 gunjah,) the lime precipitated by  $\text{SO}_3$ , the filtered liquid agitated with animal charcoal, filtered, evaporated partially, and the resin precipitated with water and dried.—EDITOR AM. JOURN. PHARM.

100 parts yield 0·2 per cent. The ashes are white, with some yellowish points; they do not effervesce with acids, they slightly blue reddened litmus paper, and attract very little moisture from the air. I have recognized among their constituents chlorine, silicic acid, phosphoric acid, magnesia, lime, soda and oxide of iron. I think the alkalinity of the ashes is due to the formation of a little subchloride of magnesium during the incineration.

In reference to the formulæ for the administration and application of haschiscin, it is best, in the preparation of the tincture, to modify it in view of the subsequent use made of it, so as to avoid the precipitation of the resin by certain intermediums. Nearly all the resin separates and adheres to the glass in the only mixture suggested by M. Gastinel.

A small quantity of a mixture of sugar and gum arabic in powder is sufficient to retain haschiscin in suspension in a mixture during several days; in this manner its action is more prompt and more decisive, and the patient has the advantage of taking comfortably all the prescribed dose, which is a point of some importance.

The following formulæ I have composed, and some of them have been much employed at St. John's Hospital during the last epidemic cholera:

*Tincture of Haschiscin.*

Take of  
Haschiscin a drachm (Troy)  
Absolute alcohol 9 " "  
Dissolve without heat.

*Balsam of Haschiscin.*

R. Haschiscin ʒss.  
Oil of spearmint ʒiiss.  
Dissolve without heat.

*Mixture of Haschiscin.*

R. Tincture of haschiscin ʒj.  
Sugar in powder, ʒij.  
Gum arabic in powder aa ʒij.  
Simple syrup fʒvj.  
Mint or cinnamon water fʒiij.

Mix the sugar and gum in a mortar, introduce the tincture by drops with trituration, then add the syrup, and afterwards, little by little, the distilled mint water.

*Ethereal Tincture of Haschiscin.*

R. Haschiscin 45 grains,  
Alcohol 835 sp. gr. 4½ dr. Troy.  
Ether (rectified) 2¼ " "  
Dissolve without heat.

*Oil of Haschiscin.*

R. Haschiscin ʒj.  
Olive or almond oil ʒxxv.  
Dissolve, with heat, and filter.

*Emulsion of Haschiscin.*

R. Oil of haschiscin ʒss. to ʒj.  
Gum arabic in powder ʒss.  
Simple syrup fʒvj.  
Orange-flower water fʒiij.  
Mix according to art.

*Saccharole of Haschiscin.*

Take of Tincture of haschiscin  $\overline{5}$ ss. (Troy.)  
 Sugar in powder  $\overline{5}$ ij.

Triturate and allow the alcohol to dissipate by evaporation, and then divide into eight powders.

This saccharole can be preserved a long time; dissolved in a little water, the resin remains suspended and can be taken readily.

If it is desirable to associate an aromatic, an essence may be used to make the tincture of haschiscin; and such other medicines as the physician may desire to associate, as calomel, ipecac, sulphate of quinia, etc., may be introduced. These mixtures can be converted into lozenges or pastilles at will.

|                                       |                     |                                          |                     |
|---------------------------------------|---------------------|------------------------------------------|---------------------|
| <i>Alcoholic Syrup of Haschiscin.</i> |                     | <i>Chloroformic Syrup of Haschiscin.</i> |                     |
| R. Haschiscin                         | grs. iij.           | R. Haschiscin                            | grs. iij.           |
| Absolute alcohol                      | gtt. xx.            | Chloroform                               | gtt. xx.            |
| Simple syrup                          | f $\overline{3}$ j. | Simple syrup                             | f $\overline{3}$ j. |
| Mix sec. art.                         |                     | Mix sec. art.                            |                     |

*Rep. de Pharm.*, Mars, 1856, from *Journ. de Med. de Brux.*

## ON HYDROCYANATE OF MORPHIA AND ITS THERAPEUTIC USES.

By M. VANDER CORPUT.

Hydrocyanate of morphia may be prepared directly, by heating freshly precipitated morphia, suspended in water or dissolved in alcohol, with hydrocyanic acid, or by saturating morphia moistened with water with vaporous hydrocyanic acid.

It can also be obtained by double decomposition in treating the muriate, sulphate or acetate of morphia by cyanide of potassium. The resulting salt is collected on a filter, washed with distilled water and dissolved in alcohol, from which it is obtained in beautiful crystals by evaporation.

Morphia, as is the case with all the other vegetable alkaloids containing but one equivalent of nitrogen, requires but one equivalent of cyanhydric acid for forming a neutral salt with the formula  $M + HO, HCY = C^{24} H^{19} N, O^6 + HC^2N + HO$ .

Precipitated hydrocyanate of morphia presents the form of a crystalline white powder. By evaporation from its alcoholic

solution it crystallizes in brilliant quadrangular long prisms grouped in stars.

This salt has a taste slightly bitter. It is but sparingly soluble in water; in the fixed oils slightly, but is more soluble in alcohol; one part of the salt requiring 500 parts of alcohol, 1000 parts of almond oil and 6000 parts of water. Ether is without action on it.\*—*Annuaire Therapeutique*, 1856.

\*[M. Vander Corput suggests formulæ for the administration of this salt in the way of syrups, pills, powders, suppositories, liniments, etc., but so far as can be judged, by his description of its properties, solubility, &c., it appears to have little merit over the alkaloid morphia. He gives it in doses of from 5 milligrammes to 3 centigrammes in 24 hours, (1-14th, 3-7ths of a grain.)—*EDITOR AM. JOUR. PHARM.*

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## Varieties.

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*On Oils, as promoting the Poisonous Action of Cantharides.*—The solubility of cantharidin in oils has led Orfila, Taylor, Christison, Mitscherlich, Oesterlen and other toxicologists, to promulgate cautions against the use of fatty matters in poisoning with Spanish flies. On the other hand, Clarus, in his "*Handbuch der Speciellen Arzneimittellehre*," considers that there are no grounds for this caution. Professor Schroff, of Vienna, who has performed a number of experiments on the action of Spanish flies and cantharidin, has published the results of the administration of these substances in combination with oil. Three rabbits—two of four and six months old respectively, and one full grown—had the poison given to them. To the first was administered  $15\frac{1}{2}$  grains of powdered cantharides, rubbed up with olive oil; to the second,  $7\frac{3}{4}$  grains, prepared in the same way; and to the third was given  $1\frac{1}{2}$  grains of cantharidin, similarly prepared; to each were also administered several table-spoonfuls of olive oil. The results, compared with cases in which the poison was given without oil, were the following:

1. The symptoms during life were identical in both classes of cases.
2. Death occurred soonest in the cases in which oil was given. Fifteen grains of cantharides with oil caused death in four hours: without oil, in five hours. Seven and a half grains with oil destroyed life in nineteen hours; without oil, in twenty-six hours. One and a half grains of cantha-

ridin, with oil, killed the animal in four hours; without oil, in from seven to ten hours.

3. The post-mortem appearances give evidence of less action of the poison on the parts with which it comes in contact, where oil is given, than when the poison is taken alone. In the three rabbits poisoned as above related, there was no vesication of the tongue; and the inflammation of the stomach and intestines was less than in cases of the other class. On the other hand, the signs of inflammation of the urinary system were more strongly marked where oil was given. The bladders were contracted and empty; the kidneys were much injected; and the urinary mucous membrane presented on its surface a large quantity of epithelium, nuclei and blood corpuscles.

The practical deduction from these experiments is the confirmation of the prohibition of the use of oil in cases of poisoning by cantharides.—*British and Foreign Med. Chirurg. Review*, from *Wochenblatt der Zeitschrift der K. K. Gesellschaft der Aerzte zu Wien*, Nos. 48 and 49, 1855.

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*Poisoning by Sulphuret of Carbon among Workmen in India-Rubber Manufactories.*—At the meeting of the Academy of Medicine in Paris, on January 15th, M. Delpech stated that he had arrived at the following conclusions with regard to the workmen in India-rubber manufactories:

1. That such workmen are liable to accidents, which consist in (a.) loss of appetite, nausea, vomiting, diarrhoea, or constipation: (b.) disturbance of the intellectual functions, hebetude, loss of memory, extreme restlessness, and unaccountable violence; (c.) more serious disturbance of the nervous functions—cephalgia, vertigo, disturbance of sight and hearing, impotence, and various forms of paralysis.

2. That experiments made on men and animals, who are affected in the same way, lead to the conclusion that the symptoms are due to the inhalation of the vapor of sulphuret of carbon.—*Ibid*, from *Gazette Médicale de Paris*, January 19th, 1856.

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*Poisoning by Gamboge.*—A delicate Parsee female, aged nineteen, took about three drachms of pipe gamboge for the purpose of self-destruction. Five hours afterwards she was collapsed from the violent purging and vomiting, which commenced about two hours after taking the drug. The matters ejected were of a deep yellow color, and the pain and suffering very great. Stimulants were given and frictions employed, and the collapse passed off; but the straining, griping and evacuation of yellow mucus continued for some days. She ultimately recovered.—*Ibid*, from *Transactions of the Medical and Physical Society of Bombay*, 1855.

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*Formula for the Administration of Phosphate of Lime.*—The majority of physicians have abandoned the use of phosphate of lime on account of its insolubility; in fact, when it is given alone, it is almost inert. According to Mr. Kuckenmeister of Zittau, this is no longer the case when this salt



is combined with the carbonate of the same base ; and with the addition of an acid, a soluble combination and truly useful medicine is then formed. The following are the proportions recommended by the author : Carbonate of lime, two drachms ; phosphate of lime, one drachm ; sugar of milk, three drachms. M. Kuchenmeister sometimes adds from fifteen grains to half a drachm of lactate of iron, and directs three pinches of the powder to be taken at the commencement of a meal. The chief object of the addition of the carbonate to the phosphate of lime is to facilitate the solution of the latter. Under the influence of lactic acid or of hydrochloric acid, which nominally exists in the digestive tube, the carbonic acid of the carbonate is disengaged, and a portion of the lime is rendered soluble. The sugar of milk is intended to furnish lactic acid. Finally, the author remarks, that in order to determine the solution of the phosphate of lime, it is necessary to bring it into contact with albuminates, which occurs when it is administered with food.—*Charleston Med. Journ. and Review*, from *Presse Medicale Belge*, January 27, 1856, p. 42. *Dublin Med. Press*.

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*Juice of the " House-Leek " Curative of Warts.*—The following facts were lately stated to us by Dr. W. W. Codman, of this city. One of his children, a boy of five years, had an abundant crop of warts upon the face and hands. All the usual means were unavailingly and perseveringly tried for their removal. Lunar caustic, and even excision, wholly failed to eradicate them. By casual recommendation, the juice of the common house-leek (*Semperivum Tectorum*, said to grow abundantly among us,) was applied to the warts a few times, with the result of causing their entire disappearance in a very short time. So manifest was the action, that no one could refuse to assign the credit of the cure to the juice of the plant used. Should this be found successful on renewed trial, it will certainly be a very valuable, as well as a simple and easily procured remedy.—*Boston Med. and Surg. Journ.*

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*Muriate of Morphia and Coffee in Neuralgia.*—M. Boileau reports that he has derived great relief in the paroxysms of neuralgia, from the administration of the muriate of morphia in a very hot infusion of highly-roasted coffee. The dose is one centigramme (one-seventh grain) for an adult, and less in other ages and in peculiar temperaments. This may be repeated when a violent paroxysm recurs, and if necessary it may be increased by frictions ; but M. Boileau has never gone beyond two centigrammes.—*Ibid.*, from *Med. Times and Gazette*.

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*Consumption of Quinine.*—The Philadelphia Medical and Surgical Journal says that 300,000 ounces of quinine are annually consumed in the United States, meaning, it is presumed, imported, as there are two very large manufacturing establishments in this country which prepare it on an extensive scale, and which are not included in the computation of the Sec-

retary of the Treasury, from which the above estimate is derived. It is worth, at the present time, about \$3 the ounce.—*Ibid.*

*Glycerin Jelly.*—There is no published formula for the article sold under this name, but in answer to many inquiries on the subject, we insert the following formula, by which a preparation exactly similar in appearance and effect is made:

|                          |         |
|--------------------------|---------|
| R. Saponis mollis, P. L. | 5ss.    |
| Mellis purif.            | f. 5ij. |
| Ol. Olivæ pallid.        | 5v.     |
| Perfume, ad libitum.     |         |

First intimately mix the soap with the honey, then gradually add the oil, stirring without intermission until all the oil is taken up. Care must be taken not to add the oil too fast.

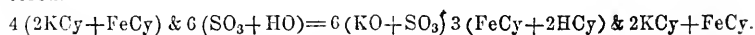
A correspondent has sent the following formula:

Powdered gum arabic,  $\frac{1}{2}$  oz., syrup, 4 oz., made in the proportion of 3 oz. of sugar to 1 oz. of water, the yolks of three eggs, olive oil, 4 oz., glycerine, 2 oz.; rub the gum and the syrup well mixed together, then add the yolks of eggs, and when well mixed, add gradually the oil and glycerine, previously mixed together.—*London Pharm. Journ.*

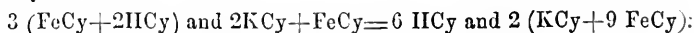
*Test for Strychnia.*—Mr. J. W. Slater, Analytical Chemist, Sheffield, in a letter to the *Times*, March 26, proposes the following test for the detection of strychnine: "A few drops of pure sulphuric acid are mixed with an equal bulk of water and allowed to cool. Chlorate of potash, in fine powder, is then added, and the suspected substance introduced. If strychnine be present, an intense maroon red color appears, gradually fading into a rose-violet. In principle this process agrees with the ordinary test, but the materials used are much less capable of producing any varied play of colors."—*Ibid.*

*Preparation of Hydrocyanic Acid.*—Wittstein has examined the reactions that take place in the preparation of hydrocyanic acid from ferrocyanide of potassium and sulphuric acid, and comes to the conclusion that—

1. The first action consists in the formation of sulphate of potash and hydroferrocyanic acid, while one-fourth of the ferrocyanide remains unaltered.



2. When heat is applied the hydroferrocyanic acid is decomposed into hydrocyanic acid and cyanide of iron, which latter combines with the unaltered ferrocyanide of potassium, forming an insoluble substance,  $\text{KCy} + 2\text{FeCy}$ .



3. The insoluble substance is partially decomposed by access of air; the

potassium of the decomposed portion being separated and removed by the water used for washing; while the cyanide of iron is converted, by combination with the cyanogen, into Prussian blue, and by oxidation of a portion of the iron into basic Prussian blue. The amount of Prussian blue in the blue substance is about 10 per cent.—*London Pharm. Journ.*, from *Vierteljahrsschrift für Prakt. Pharmacie*, iv. 515.

*Composition of the Yellow Substance obtained in the Molybdic Acid test for Phosphoric Acid.*—Nutzinger has analyzed this substance, and finds that, when air dried, it consists of—

|                 | I.           | II.           |    | Calculated.   |
|-----------------|--------------|---------------|----|---------------|
| Water           | 1.875        |               |    |               |
| Ammonium oxide  | 3.407        | 3.481         | 5  | 3.557         |
| Phosphoric acid | 3.738        | 3.818         | 2  | 3.962         |
| Molybdic acid   | 90.740       | 92.701        | 48 | 92.461        |
|                 | <hr/> 99.760 | <hr/> 100.000 |    | <hr/> 100.000 |

When heated at  $212^{\circ}$  it loses water, and has the composition II.

The chemical constitution of this substance is obscure, and will probably be rendered intelligible only by a more intimate knowledge of the compounds of molybdic acid generally.—*Ibid*, from *Ibid*, iv. 549.

*The Kumis and Raky of the Tartars.*—The Calmucks and most of the shepherd tribes of Central Asia prepare from the milk of their cattle two kinds of beverage. The one is called "Kumis," and is sour milk which has undergone a certain degree of vinous fermentation; it corresponds with the "pinna" of the Laplanders, which is made with reindeer milk.

The other beverage is an intoxicating, agreeably-flavored liquid, obtained from "Kumis" by distillation. The Calmucks make the distillation in a vessel of unburnt clay, a piece of reed serving for the delivery tube; the receiver is covered with wet clay so as to condense the vapor. The distillation is sometimes effected with reeds or dried herbs for fuel, but more generally with the dung of cattle, especially the dromedary, previously dried in the sun.

Good "kumis" cannot be obtained from every kind of milk. That made with the milk of cows or of sheep is bad. The milk of camels, and of mares particularly, gives three times as large a product.

The "kumis" is prepared by mixing six parts of warm milk with one of warm water, and some old "kumis" as a ferment; then fermenting with frequent agitation. Artificial temperature and agitation appear essential for the fermentation.

The spirit obtained from "kumis" by distillation is called "rak." or "raky." This word is evidently derived from "arak," which is the name given by the Indians to their spirituous liquors.

The preparation of these beverages is the office of the women.—*Ibid*, from *Union Médicale, Journ. de Pharm.* xxvii., 196.

*Florida Indigo*.—Indigo was formerly cultivated in Florida, for which the climate and soil is well adapted. It grows wild upon the barrens in almost every portion of the Peninsula. When cultivated by the English in this country, the Indigo of Florida was considered in the London market superior to all others, except that of Caraccas. The manner of cultivating and manufacturing advantageously is as follows :

The seed, which is very small, is soaked for some twelve hours, then mixed with ashes or sand, and sown in drill rows, about eighteen inches apart. The time for sowing in Florida is from the middle of March to the first of April. When the young plant makes its appearance, it resembles white clover, and must be carefully weeded, and the earth kept loosed about its roots. Three weedings are sufficient to carry it up to the first cutting, which commences when the plant begins to bloom, say about the first of July. The plant is so easily injured by the sun after it is plucked, that the cuttings should be in the afternoon. As fast as it is cut, which is done by a sickle, it is carried to a vat called the steeper. This vat is made of plank, is water-tight, and varies in size according to the extent of the operations of the planter. The steeper is filled with cuttings immersed in water. Planks with weights upon them are then placed on top to keep the cuttings beneath the water. In this state steeping is continued for about ten hours, or less, according to the temperature of the water. When the water assumes an olive color, it is drawn into the "beater," another vat placed alongside and beneath the steeper, and connected by a tube, and fastened with a valve or spigot. The liquid is now churned by hand or with machinery, until it becomes lighter in color, and a blue fecula begins to make its appearance. From time to time lime water is thrown into the beater during the "churning." After the fecula spoken of distinctly appears, the water is suffered to remain about four hours for the Indigo to settle. It is then drawn off, the sediment placed in bags, and hung up to drain. When drained sufficiently, it is placed in boxes to dry, under gentle pressure; and when dried firm, it is cut up into square cakes and placed in the shade, to become completely dried by evaporation. The shorter the steeping and the less the beating, the lighter will be the color of the Indigo. The Indigo plant will yield two or three cuttings a season, and one hand will cultivate about three acres, the result being from 175 to 200 lbs. of the article. Unlike sugar cane or corn, the Indigo requires no expensive machinery. Where it is made only for domestic use, barrels are used for steeping and beating.—*Florida News*.

*American Tamarinds*.—William M. Singleton, Esq., of Winchester, Va., has succeeded in obtaining a fine growth of tamarinds, from seeds procured at a confectioner's shop. One of these trees, eight years old and measuring

six inches in diameter, last year perfected fruit of a quality quite equal to that imported. In addition to its value for fruit, it is a most beautiful ornamental tree, having a rapid growth, symmetrical form and beautifully delicate foliage.

This tree is worthy of a trial upon the Western prairies. The seed may be sown either in fall or spring, in drills about four inches apart, and covered with two or three inches of light rich soil. It is preferable to sow late in the fall, in order that the buds may be acted upon by the frost. When the shoots are about three feet high, they may be transplanted to the sites where they are to remain permanently. A handful of tamarinds from a fruit store will supply any one with seeds for a trial.

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*Composition for Coating Iron on Ships' Bottoms.*—An English mechanic has invented a composition for coating iron and other ships' bottoms. The following is the mode of carrying out the invention:—Take 6 cwt. of mineral or Turkish asphaltum, or best purified coal pitch, melt and boil it for six hours; then allow it to cool to the temperature of 240 degrees Fahrenheit. Mix previously 6 cwt. of best purified ground plumbago, together with 60 lbs. of arsenite of copper, finely pulverized, with 80 gallons of rectified coal-tar-naphtha; when the plumbago, arsenite of copper and naphtha are well mixed, add to the melted asphaltum at the temperature of 240 degrees. The whole must be well mixed together and applied like paint.

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*Wires of the Electric Telegraph.*—The wires now instead of being exposed, in Paris, are under ground. A trench is dug twelve or fifteen inches wide, in which the wires are placed side by side, but so as not to touch each other. Liquid bitumen is then poured on them, which surrounds the wires and completely isolates them. It secures them from the danger of being exposed to malevolent persons and of being deranged by atmospheric influence. The wires from the Tuilleries to the ministry of the interior have been laid down in this manner, and others are in course of execution on the quays and in the Rue Richelieu. The same plan is to be adopted at Lyons.

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*Self-Closing Faucets.*—Mr. Tuthill, of Boston, has introduced to the public some self-closing faucets for the supply of water or other fluids, the peculiarity being that there is no drip nor waste, and also an instantaneous full stream. Vulcanized rubber forms the internal spring and packing to close a valve acted upon by pressure with the finger. It is in the truest practical sense a self-closing contrivance, as the fluid can only run so long as the pressure of the hand is upon the valve.

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*Anti-blenorrhagic Opiate.* (Beyraud).—Take of copaiba 10 drachms, calcined magnesia 4 drachms, powdered alum 15 grs., catechu 1½ drachms, cubebs 9 drachms, crude opium 15 grs., essence of mint and cinnamon of each 10 drops. Mix.

Of this opiate M. Beyraud directs a teaspoonful three times a day.  
*Annuaire Therapeutique*, 1856.

*Dover's Powders of the Germans.*—

|                               |   |   |            |
|-------------------------------|---|---|------------|
| Take of Powdered ipecacuanha, | . | . | 2 grains.  |
| Powdered opium,               | . | . | 2 "        |
| Powdered nutmegs,             | . | . | 12 "       |
| Powdered columbo root,        | . | . | 12 "       |
| Sugar,                        | . | . | 4 drachms. |

Mix well by trituration, and divide into 12 powders. One every hour.  
*Annuaire Therapeutique*, 1856.

*Syrup of Coffee.*—[Some of the apothecaries of New York and elsewhere have introduced among their mineral water syrups, a syrup of coffee. The following formula, taken from Dorvault's "Officine," is offered to those who incline to try this new mode of taking a glass of cold coffee. With the addition of cream it would doubtless be much improved as a beverage,—to most persons.—EDITOR AM. JOURN. PHARM.]

|                                     |       |           |
|-------------------------------------|-------|-----------|
| Take of Coffee, roasted and ground, | .     | lb. j.    |
| Simple syrup,                       | .     | lb. viii. |
| Boiling water,                      | q. s. |           |

Treat the coffee, by displacement in a proper apparatus, with the boiling water until two pounds of liquor have passed, put the syrup on the fire and evaporate until it loses lb. ij, then add the infusion of coffee and strain. [Two table spoonfuls of this syrup to a cup of boiling water or milk will make a cup of coffee. For mineral water it may be less concentrated, and may be diluted with simple syrup.]

## NOTICE.

*To the Pharmacutists and Druggists of the United States.*

### AMERICAN PHARMACEUTICAL ASSOCIATION.

The third Article, 1st Section of the Constitution, requires the President, at least three months previous to the annual meeting, to publish a call in such Journals as he may select, stating therein the object of the Association and the conditions of membership. In compliance with this duty, you are hereby notified that the next Annual Meeting of the Association will convene in the city of Baltimore on the second Tuesday, (the 9th) of September, at 3 o'clock, P. M.\*

\* [In a letter just received from Mr. W. S. Thompson, Secretary of the Maryland College of Pharmacy, we are informed that the President of that Institution had obtained the lecture room of the Baltimore College of Dental Surgery, corner

The objects of the Association are to deliberate on the condition of our profession, the advancement of pharmaceutical knowledge, and the elevation of the professional character of Druggists throughout the United States. The following extracts from the Constitution exhibit the Conditions of Membership.

*Conditions of Membership.*

SECTION 1. Every apothecary and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, who, after duly considering the objects of this Association, and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

SECTION 2. The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said committee. If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot. Should an application occur in the recess, the members of the committee may give the approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

SECTION 4. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution. Members shall be entitled, on the payment of five dollars, to receive a certificate of membership signed by the President, one Vice President and the Secretary, covenanting in writing to return the same to the proper officers on relinquishing their connection with the Association.

SECTION 5. Every local Pharmaceutical Association shall be entitled to five delegates.

JOHN MEAKIM, President.

*New York, April, 1856.*

of Hanover and Lombard streets, Baltimore, for the meeting of the American Pharmaceutical Association in September next. A Committee will be in waiting at the room, between the hours of 4 and 6 P. M., on Monday the 8th. to receive such members or strangers proposing to attend as may be in that city. The time of meeting is at 3 o'clock, P. M., on Tuesday the 9th.—*EDTOWN AM. JOURNAL PHARM.*]

## Minutes of the Maryland College of Pharmacy.

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BALTIMORE, June 5th, 1856.

At the stated monthly meeting this evening, the President, DR. GEORGE W. ANDREWS, in the chair, the Board of Trustees reported the organization of the School of Pharmacy, on a plan similar to that of the Philadelphia College. The following gentlemen have been elected Professors, viz. :

DR. LEWIS H. STEINER, Chemistry.

DR. CHARLES FRICK, Materia Medica.

MR. I. J. GRAHAME, Practical Pharmacy.

Mr. Thompson submitted formulæ for compound syrup of ipecacuanha and powdered blue mass, which were read, and, on motion of Mr. Moore, ordered to be placed on file for future reference.

On motion of Mr. Grahame, the subject of powdered blue mass was referred to a Committee, with instructions to report at a future meeting on the merits of the several formulæ extant. The Chairman appointed Messrs. Grahame, Sharp and Charles Caspari.

On motion of Mr. Moore, a Committee was appointed to procure a suitable room for the annual meeting of the American Pharmaceutical Association, which will convene in Baltimore on Tuesday, 9th of September, 1856. The Chairman appointed Messrs. Moore and Grahame.

The meeting then assumed a conversational character, and an animated discussion of the Displacement Process, the nature of the changes which are observed to take place in Syrup Iodide of Iron, and the different methods of preparing Syrup of Ipecacuanha, occupied the remainder of the evening.  
Adjourned.

WILLIAM S. THOMPSON, *Secretary*.

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### Code of Ethics of the Maryland College of Pharmacy.\*

Pharmacy being a profession which demands knowledge, skill, and integrity on the part of those engaged in it, and being associated with the medical profession in the responsible duties of preserving the public health, and dispensing the useful though often dangerous agents adapted to the cure of disease, its members should be united on some general principles to be

\* [A pamphlet containing the CHARTER, CONSTITUTION AND CODE OF ETHICS of the Maryland College of Pharmacy, has been sent to us. We insert the "Code" entire as being a document calculated, if followed, to effect a great reform in practice.—EDITOR.]



observed in their several relations to each other, to the medical profession and to the public.

With this object in view, as well as the elevation of the professional standard, the members of the *Maryland College of Pharmacy* have agreed upon the following principles for their government in their business pursuits:—

ARTICLE 1.—That we adhere to the *National Pharmacopœia* as our guide in the preparation of all officinal medicines, so far at least as the strength of said preparations is concerned, and also to the mode of preparation, except in such cases where we may conceive the same result attainable by another process believed by us to be preferable. We would except from this restriction any particular preparation that may be specified by a Physician, as, for instance, *Majendie's* Solution of Morphia.

ARTICLE 2.—We discountenance all secret formulæ between Physicians and Apothecaries, and hold it to be our duty to communicate the formula and mode of preparation of any medicine which is used in the practice of a physician, upon the request of a member of this College, where such formula shall have originated with us, and even when we may have otherwise obtained it, unless in the latter instance we would violate a moral principle in so doing.

Furthermore, we hold it to be the duty of every member of this College to communicate at the monthly meetings all improvements in formulæ, manipulation, apparatus, &c., and such useful hints as may have occurred to his mind from time to time in relation to the business, for the sake of adding to the general fund of knowledge and to promote the advancement of the profession.

ARTICLE 3.—As the diagnosis and treatment of diseases belong to the province of a distinct profession, and as a pharmaceutical education does not qualify the graduate for these responsible offices, we should, where it is practicable, refer applicants for medical aid to a regular physician. The oft repeated assertion that many persons are not pecuniarily able to employ a physician, may be met with the fact, that there are several excellent and well managed Dispensaries where medical attendance and medicines are furnished gratuitously.

ARTICLE 4.—We discountenance all connection between Apothecaries and Physicians, either as joint proprietors of stores, or in stores which are owned by Physicians and conducted by Apothecaries under their own names. And being convinced that the practice of allowing Physicians a percentage on the price of their prescriptions, is not only highly disreputable to both the Physician and Apothecary engaged therein, but injurious to the public interest, we do not consider any Apothecary who is guilty of this dishonorable practice, entitled to associate with us as a member of this College.

ARTICLE 5.—The Apothecary should be remunerated by the public for his knowledge and skill, and in his charges should be regulated by the time consumed in preparation, as well as by the value of the article sold;

although location and other circumstances necessarily affect the rate of charges at different establishments, no Apothecary should, intentionally, undersell his neighbors with a view to their injury.

ARTICLE 6.—One of the principal duties of the Apothecary is to supply himself with genuine and pure articles of the *Materia Medica*, and such chemical and pharmaceutical preparations as he may not prepare himself. In the selection of many articles, such as Powders and some Essential Oils, to procure them genuine and unadulterated, it is necessary to rely on the integrity of the wholesale druggist; we therefore, hold it to be our duty to avoid the druggist who would knowingly furnish a sophisticated or impure article of any description whatever; and as compounding prescriptions and dispensing medicines at retail, form no part of the business of the wholesale druggist, but is highly injurious to our trade, we cannot be expected to make our purchases from those who are addicted to either the above practices. Any member of this College becoming cognizant of either of those practices, shall be required to make it known to the College at its next meeting.

ARTICLE 7.—Both Physicians and Apothecaries are liable to commit errors, the former in writing prescriptions, the latter in compounding them; we therefore deem it to be our duty, when we are satisfied that an error has been committed in writing a prescription, to return it to the Physician for correction, and to use commendable tact in concealing the same from the patient, so as to avoid compromising the reputation of the Physician. On the other hand, when the error is on the part of the Apothecary, the Physician should feel bound to screen him from undue censure, unless it is the result of ignorance or culpable negligence; and in cases of errors not arising from either of the latter causes, we should feel bound to protect each other; never giving currency to a report that will affect the reputation of a brother Pharmaceutist, and which may, possibly, have no foundation in fact.

ARTICLE 8.—As there are many powerful substances that rank as poisons, which are constantly kept by Apothecaries, and prescribed by Physicians, and which are only safe in their hands—as Arsenious Acid, some Vegetable Alkaloids, Ergot, Cantharides, etc.,—we hold that the Apothecary is not justified in vending these powerful agents indiscriminately to persons unqualified to administer them, and that a prescription should always be required, except in those cases when the poisons are intended for the destruction of animals or vermin—and in these instances only with the guarantee of a responsible person. And we hold that when there is good reason to believe that the purchaser is habitually using opiates or stimulants to excess, every conscientious Apothecary should discourage such practice.

## Editorial Department.

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PHILADELPHIA COLLEGE OF PHARMACY.—SCHOOL OF PHARMACY.—In the advertisement of the Lectures of this School hereto appended, the commencement of the lectures is stated October 20th, when it should be October 6th. Our readers will perceive that the lecture evenings have been changed from Tuesday, Thursday and Saturday, to *Monday, Wednesday and Friday*, a change made in accordance with the wishes of a number of employers, who find it inconvenient to spare their apprentices on Saturday evenings.

QUACK MEDICINE LABELS NOT PATENTABLE.—The following remarks and letters are taken from the May number of the New York Journal of Medicine. Dr. Purple appears to have entirely misunderstood the tenor of the letter of Judge Conkling as to the *effect* of withholding copyright from labels on quack medicines. The sole object of such persons in getting their labels patented, is to prevent others from putting up imitations and selling them for genuine. Heretofore the maker of a quack medicine with a patent label could prosecute a party who had his label copied and issued with that intent, but now the quack will not have this protection, according to Secretary Marcy's letter. The medicines themselves are improperly called "patent," as the quack is too shrewd to trust his recipe with the patent officers, who always publish abstracts of their contents. We would have been glad if Dr. Purple's idea had been correct, and a legal restraint put on this great and crying evil, which truly calls for redress from the powers that be.

If we understand Secretary Marcy, he denies the protection of the copyright law to all "mere labels" used as such, and hence patented labels for cod-liver oil, or cotton goods, or cutlery, are equally without virtue in protecting them from imitation.

*The Sale of Patent Medicines a Violation of Law—Important Communication from the Clerk of the District Court of the Northern District of New York.*—The following correspondence, which we now for the first time make public, clearly establishes the fact, that the traffic in patent medicines, one of the greatest curses from which the community suffers, by the imposition of empirics, is done under the most shallow pretence of legality. It has always been a mystery to us how honest men could be so heedless of public good, as to legalize the indiscriminate sale of such dangerous compounds as many of these nostrums are; but we here have explained the whole secret. As might have been anticipated, from the character of the men engaged in their manufacture, the sale of these drugs is effected fraudulently.

We trust some measures will be taken to put a stop to the sale of these

vile compounds, and bring to justice the violators of law, who poison public health and grow rich thereby. As these nostrums are not truly patented, the secret of their preparation being studiously withheld in defiance of the explicit declaration of our Patent Laws, we would suggest the passage of a law imposing a heavy penalty for the sale of "patented" medicines, when in fact they are not patented, and allow half the fine recovered, to the informer. It would be a truly philanthropic effort, worthy a Howard, or a Mrs. Fry, to secure the community from this terrible infliction of the sale and use of "patent" medicines.

We cannot sufficiently express our admiration of Mr. Conkling's integrity and enlightened discharge of his official duties. For several years he has uniformly refused to grant these applications to patent labels, from a conscientious belief in the illegality of such proceedings, and a conviction of the worthless character of such compounds. During this time he has not only sacrificed the income which is due from such grants, but incurred the odium and bitter hatred of this miserable class of impostors. In behalf of the medical profession we tender our acknowledgements for the services which he has thus rendered directly to the community at large, and indirectly to legitimate medicine.

From the annexed "circular," it will be seen that Mr. Conkling's views of the Patent Laws, are endorsed by the State Department, and instructions in conformity therewith have been promptly issued by Mr. Secretary Marcy. —*Eds. New York Journal of Medicine.*

BUFFALO, March, 1856.

DEAR SIR:—Will you do me the personal favor to furnish me with a written statement of your views on the subject of copyrights for labels, etc., as expressed to me in a conversation yesterday.

Coming from a gentleman of your rank and position, I am certain that they would possess interest; and I would like to give them publicity through some of our Medical Journals.

Sincerely wishing that the public had many more such faithful servants,

I remain yours truly,

AURELIAN CONKLING, Esq.

FRANK H. HAMILTON.

DISTRICT COURT OF THE UNITED STATES FOR  
THE NORTHERN DISTRICT OF NEW YORK,  
CLERK'S OFFICE. }

BUFFALO, March 18th, 1856.

DEAR SIR:—I am much obliged for the interest manifested by you in the subject with which I lately troubled you; and although it is probable that in your politeness you over-estimate the importance of the views expressed to you, and of those contained in my letter to the Hon. S. G. Haven, still it is possible that they may be useful to others, and I therefore will proceed to repeat them here, for such use as you may deem expedient. I am much pleased with the polite interest you manifest in the subject under consideration, because, I regret to say, I have heretofore experienced very different treatment from some persons who have found their way into your profession, and who not only so far forgot their professional obligations, as to manufacture nostrums, but were also guilty of low abuse of an officer whose sense of duty would not admit of his being made instrumental, improperly, in imposing their mixtures upon the public.

The immediate purpose of my letter to our representative in Congress, was to invoke the attention of the Department of State to what it seems to me is a great abuse and perversion of the provisions of law in relation to *copyrights*. The subject of copyrights is under the general supervision and control of the State Department of the United States; and officers who have subordinate duties to perform must, to some extent, be subject to directions and instructions from that department. Applications are frequently made to me, to record, under the provisions of the law above alluded to, labels of medicines, compounds, and mixtures, of different grades of pretension, from an "elixir of life" or a "diarrhœa cordial," to a hair-dye or a corn-salve.

Upon the occurrence of the first application of this sort, a number of years ago, being asked my reasons for refusing to treat the subject as one embraced in the provisions of the Act, entitled "An Act to amend the several Acts respecting copyrights," I made the following reply, a recital, in part of which, will express the views which have ever since governed me, upon the subject:—

"I am sorry that my views of the Act of Congress, above mentioned, are such as to interfere with your interests or wishes. It is not the province of the Clerk of the District Court to 'grant' anything. His duties are ministerial, and upon the subject of copyrights he is bound to do what he is directed to do, by the Act of Congress.

If I should record the *label* sent by you, and should send you a certificate of the fact, I would thereby 'grant' you nothing, nor would you gain anything, unless the Act of Congress embrace such a subject.

I have examined, with considerable care, the Act of Congress above mentioned, and I will state some of my views upon it; from which you will infer that I do not think proper to record a *label* under that Act.

My opinion is, that the 'map, chart, musical composition, print, cut, or engraving,' must have a value as such, and be intended for sale as such; that whichever it may be, print, cut, engraving, *it* must have a *title* applicable to itself, which title is to be recorded.

I am also of opinion, that the Act of Congress was designed to promote the acquisition and diffusion of knowledge, and to encourage the production and publication of works of art, the general purpose being to advance the people in civilization and refinement.

I think, furthermore, that, by the Act to which I have referred, Congress did not intend to prevent the imitations of the stamps and labels of any manufactured article, or goods, or merchandise. That is a subject of such extensive interest and importance, that, if it had been the intention of Congress, to embrace it in the provisions of the law, that intention would have been distinctly and unequivocally manifested. It is not likely, however, that such a provision by Congress will ever be found so much out of place, as it would be in 'An Act to amend the several Acts respecting *copyrights*.'

Furthermore, I am quite certain that Congress did not intend that this Act should be so prostituted, as to be made instrumental in deluding the ignorant and inconsiderate, into the purchase and use of the various nostrums, catholicons, and panaceas, which are so much worse than useless to the community."

It is the practice, I am informed, in many of the Judicial Districts, to make records of such labels as are above mentioned, and I suppose it is done to avoid the trouble and ill-will engendered by a refusal. It is entirely clear, however, that such a practice is not in accordance with the intention and design of the Act of Congress above mentioned; and I have no doubt that if the mischiefs of the practice were realized, it would be discontinued.

The course of proceeding above mentioned, is that by which almost the whole number of the mis-called "patent medicines" are brought forth. It would seem to be unnecessary to state, that there is no force or validity whatever in this proceeding, for such pretended purpose.

There are means provided in the Patent Laws, for securing to any individual the exclusive right to "any new and useful art, machine, manufacture, or composition of matter," which he may invent; and the necessary requirements in

order to accomplish the purposes are clearly and definitely prescribed, as follows:—But before any inventor shall receive a patent for any such new invention or discovery, he shall deliver a written description of his invention or discovery, and of the manner and process of making, constructing, using, and compounding the same, in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable a person skilled in the art or science to which it pertains, or with which it is most nearly connected, to make, construct, and use the same."

The Act also provides that the inventor shall accompany his application "with specimens of ingredients, and of the composition of matter, sufficient in quantity for the purpose of experiment, where the invention or discovery is of a composition of matter." The Act also provides, that the applicant shall make oath, that he does not know or believe that the composition of matter was ever before known or used. These and the other requirements of the law being complied with, provision is made for a critical examination into the merits and character of the alleged invention; and, "if the commissioners shall deem it to be sufficiently useful and important, it shall be his duty to issue a patent therefor." This, it will be perceived, is a very different course of procedure from that of filing a label in the clerk's office; and a label, not even indicative of the character of the compound it is to cover. The law, it will be perceived, provides for a truthful statement of the ingredients and proportions of every patented compound. The purpose and effect of the provision are two-fold. In the first place, the means are afforded for an intelligent and careful examination into the compound, in order to determine whether it is worthy of the countenance of the government; and, secondly, after the termination of the privileges, secured by the letters-patent, the necessary knowledge is at hand, to make the invention directly available to the public, by furnishing to all, a knowledge of its ingredients and mode of preparation. Moreover, the "letters-patent" themselves, in accordance with their true purport, contain a plain statement of these particulars. There is something *open* in these requirements, and in the whole course of proceeding marked out in relation to patents, and the fact is, just as one would suppose, that there are really very few "patent medicines." The medicines sold as such, are, nearly all of them, utterly destitute of any real basis for the pretence under which they are imposed upon the public.

If the practice of recording labels of medicines shall be discontinued, in the clerk's offices, one important step will be taken towards clearing away the delusion which prevails upon the subject. And if your profession, with that true regard for the general public good which characterizes its *worthy* members, will take the subject in hand, I have no doubt that you can obtain the enactment of penalties against the sale of any medicines under the pretence that they are, when, in truth, they are not, patent medicines. There has been legislation to prevent the adulteration of medicines; but, it seems to me, that it is a more important end to shield the people against the miserable mixtures, which, as things are now managed, are, by the apparent encouragement of the government, imposed upon them. I regret, dear Sir, that this letter has necessarily been so hasty; I do not mean, however, to intimate that its positions are not deliberately taken. Very respectfully, your obedient servant,

AURELIAN CONKLING.

DR. FRANK H. HAMILTON.

#### CIRCULAR.

DEPARTMENT OF STATE, }  
WASHINGTON, April 11, 1856. }

Mr.-----,

*Clerk of the District Court of the United States.*

SIR:—The Act of Congress approved February 3, 1831, entitled "An Act to amend the several Acts respecting copyrights," is "An Act for the ENCOURAGE-

MENT OF LEARNING, by securing the copies of maps, charts, and books, etc., to the authors and proprietors of such copies ;" and, inasmuch as mere LABELS are not comprehended within the meaning of said Act, you will, for the future, refuse, in all cases, to record or issue a certificate for the same under said Act.

I am, Sir, very respectfully, your obedient servant, W. L. MARCY.

THE AMERICAN PHARMACEUTICAL ASSOCIATION.—The period for the Annual Meeting of this Association is rapidly approaching, as will be seen by reference to the call at page 372. In the interval that has elapsed since the last meeting, what have its friends done to forward the reforms aimed at in its establishment? This question will be answered practically by the results of the next meeting. It is for the members, and others of the profession, to determine whether it will be a tame, uninteresting gathering, without spirit to suggest or energy to act; or whether it will exhibit results useful to the profession, creditable to the Association as a scientific body, and amply repaying the members present for the trouble they have taken to meet together. It may be asked by many, in what way can I contribute to this end? my scope is limited, others are better qualified for such work, and will do it. *There is the great mistake.* We are too apt to despise little things, or fancy because they are *little* they are insignificant. The rich mines of Potosi might have yet remained unknown but for the accidental pulling of a plant by a hunter, who, though not a metallurgist, saw a *something* that induced him to *mention it to others better qualified to judge*, and a thousand millions of silver have resulted. Equally humble was the origin of that golden current, which now ceaselessly flows from California, in the mill-race labors of Captain Sutter. It was the accidental mention of the expulsion of fixed oil from almonds by ether, in the experiments of Bontron-Charlard, that inspired Boullay with the idea of the process of displacement, than which no greater improvement has been suggested in the practice of Pharmacy in latter times. The humblest member of the body has opportunities for observation that *may* point to a new fact of surpassing interest; and, although *he* may not grasp the results that flow from it, yet by *mentioning it to others* he may become indirectly the instrument of great usefulness. It is quite time that the Association had advanced beyond the *organizing period of its existence*; its function of contributing to the progress of science and skill, by developing and directing the talent of the profession in proper channels, should now be called into action by the annual appointment of judicious committees, with a *reasonable amount of labor to perform*, in which they *feel an interest*; by the offer of prizes for special, well defined discoveries or improvements in processes or instruments; and by a generous encouragement to the brethren in every section of our country, to improve their professional standing individually, and by organization. Let our Southern brethren render their genial climate subservient to the cause by the introduction from abroad of valuable drug yielding plants; let the mechanical ingenuity of the North improve our apparatus and discover new processes, and let genius everywhere make use of these in giving greater efficiency to our art as the indispensable handmaid of practical medicine.

Tully's "*Materia Medica, or Pharmacology and Therapeutics.*" Numbers 15, 16 and 17, Jan., Feb., and March, 1856.

Since our last issue, three numbers of this work have been received, which bring it to page 1098 of the first volume. In number 16 are given the general characteristics of the class Erethistica. According to Dr. Tully's definition, "Erethistics are articles which produce a preternatural degree of activity, and an augmented exertion of the powers and energies by which any function is discharged. A mere and pure Erethistic agent may, indeed, be compared to the whip and spur, which do not give any new and additional power or energy, but only bring into greater activity that which already exists, which was not previously exerted, at least to the same extent, and which, perhaps, was latent or prostrated in a greater or less degree." This definition is further explained by many pages of observations on the varieties of Erethistics which are considered in eight groups, the whole occupying 50 pages. To give an idea of the agents thus classed, we may mention as among them, Ignatia Amara, Nux Vomica, Aconitum, Arnica, Kalmia, Veratrum Viride, Sanguinaria, Lobelia Inflata, Sabadilla, Colchicum, Cimicifuga, Pulsatilla and Mezereum. These drugs are by no means considered as possessing the same powers, but act in a manner that enables them to be classed under the above general character. In the discussion of the therapeutic powers of these articles, Dr. Tully reminds us of the manner of some chemical theorists who, in erecting a theory, have no other way to connect the different parts than but by assuming that certain blanks should contain substances not yet discovered. Indeed, the ground-work of the therapeutic structure Dr. Tully is now laying is so extensive, that a sparsity of material is quite unavoidable, inasmuch as his mode of viewing the operation of medicines is very different from that found in ordinary works. Hence, in very many instances, conjecture has to take the place of observation, in order to carry on the work and put substances in the position or classes that they most probably belong in, but which only some isolated observation, or botanical affinity as yet gives assurance of.

The next class, "Euphrenica," is one of the most important of the materia medica, and extends through the entire 16th number into the 17th. The definition of this class given by Dr. Tully is six-fold, relating to as many distinct grades of power in articles classed as Euphrenics. It is as follows:—"The Euphrenics, in the first grade of their operation, obviate languor and lassitude when it exists; in the second grade of their operation, they produce a peculiar calm, placid and pleasant sensation, state or condition; in the third grade of their operation they produce a peculiar, rather agreeable, and apparently non-exhausting preternatural wakefulness; in the fourth grade of their operation they produce a greater or less degree of positive exhilaration, which, by some articles, may be increased to such a degree that the actions of the subject are not under control of his will, and, perhaps, it amounts to actual delirium; in the fifth degree of their operation



they occasion a peculiar suspension of the functions of the hemispheres of the cerebrum, and an anæsthesia or destitution of common sensation, or a state of insensibility to pain, sometimes with a complete loss of consciousness, and occasionally with a moderate degree of it. The sixth or last grade of the operation of this class of agents, i. e. the manner in which they destroy life, is unknown to me."

Our readers will at once perceive, that numerous and important remedies are included in this class, such as opium, indian hemp, coffee, tea, chocolate, cocoa, tobacco, chloroform, ether, alcohol, &c., &c. We would be glad to present some of Dr. Tully's views in this connection, but want of space will prevent.

The 17th number concludes in considering the Tonics.

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*The Art of Perfumery, and Method of obtaining the Odors of Plants, with instructions for the manufacture of perfumes for the handkerchief, scented powders, odorous vinegars, dentifrices, pomatums, cosmetiques, perfumed soap, etc., with an appendix on the colors of flowers, artificial fruit essences, &c., &c.* By G. W. SEPTIMUS PIESSE. Philadelphia: Lindsay & Blakiston, 1856, pp. 304. Illustrated with cuts.

The contents of this elegant little volume appeared originally in a series of papers in the "Annals of Pharmacy and Practical Chemistry," a monthly periodical, published at London several years since, but now defunct. During the past two years, these papers have all been re-published in this Journal, except the introductory chapters, and our readers are familiar with their value and scope. Recently these papers have been collected and published in London in a neat volume, with some additions, in the form of an appendix, amounting to about fifty pages, consisting of short papers, more or less allied to the subject of the work, which have been gathered from the "Annals" and other sources. The volume before us is a re-publication of this book. As a treatise on perfumery, M. Piesse's work merits the attention of all those interested in the manufacture of essences, odorous waters, soaps, sachets, powders, and other items of which it treats, and particularly to the druggist and pharmacist. It is very neatly "gotten up" by the publishers, Messrs. Lindsay & Blakiston, and deserves a corner in the pharmacist's library.

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*The Practitioner's Pharmacopœia, and Universal Formulary, containing 2000 classified Prescriptions, selected from the practice of the most eminent British and foreign medical authorities, with an abstract of the three British Pharmacopœias, and much other useful information for the practitioner and student.* By JOHN FOOTE, M. R. C. S., London. With corrections and additions by an American Physician. New York: S. S. & W. Wood, 1855. Pp. 390, 12mo.

We have here another re-publication from a class of works that of late years

have come to us from England, apparently more with a view to make money than for a real need of such helps, which already abound. In France formularies are quite numerous, and Majendie's, long since translated, is well known to the English reader. Of our own country, we have Ellis's and Griffith's Universal Formulary, which are excellent works of their kind, generally well known to American physicians, and the latter is very comprehensive. Then, of the class under consideration, we have "The Prescriber's Pharmacopœia," "Beasley's Prescription Book," and others that we have not seen. All of these last works, in common with that now before us, have their merits, and prove more or less useful to the practitioner, but they embody so many receipts based on preparations not kept in the United States, that they tend to complicate the subject, and sometimes to mislead the physician in reference to preparations he is using; not to speak of the confusion of nomenclature which necessarily arises.

Preliminary to the Formulary is (1) an account of the *treatment* to be pursued in *accidents*, as wounds of different kinds, burns, sprains, fractures, dislocations, foreign substances in the eye, ear or throat, fainting, sun-stroke, convulsions, etc. (2) Of *Poisons* and treatment. (3) An abstract of the three British and the U. S. Pharmacopœias. (4) An abstract of Majendie's Formulary. (5) Artificial mineral waters, and (6) rules for prescribing.

We have not had time to examine the accuracy of the quantity marks which are used throughout the book, nor the character of the formulæ in a pharmaceutical point of view, further than to observe, that no directions are given to the dispenser—the *modus præparandi* being left, as in ordinary prescriptions, to his judgment.

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*On the Causes and Curative Treatment of Sterility, with a preliminary statement of the Physiology of Generation.* By AUGUSTUS K. GARDNER, A. M., M. D., Fellow of the N. York Academy of Medicine, &c., &c. New York: Dewitt & Davenport, 1856. Pp. 170. Octavo. Illustrated.

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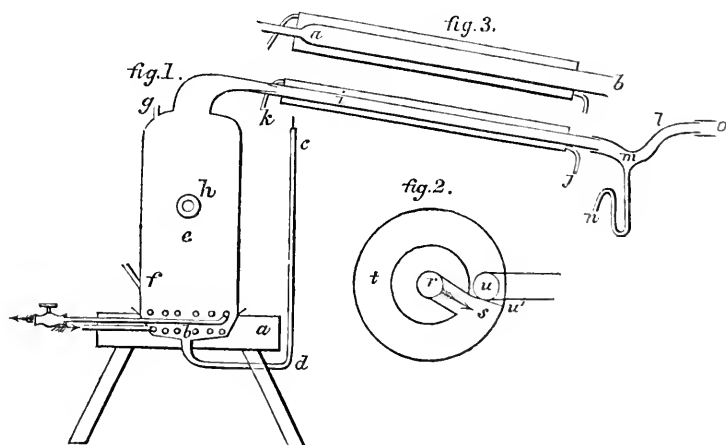
*Vierteljahresschrift für praktische Pharmacie*, von Dr. WITTSTEIN, V. Band. 1 and 2 heft, 1856, in exchange for the American Journal of Pharmacy has been received.

SEPTEMBER, 1856.

By EDWARD R. SQUIBB, M. D., U. S. NAVY.

Experience in making ether once or twice a year, for some years past, has led to the following convenient apparatus for its production by steam heat. The character of the product obtained, and the simplicity, cheapness, and safety of the apparatus, seem to warrant the publication of the plan somewhat in detail; for although no new principles are involved, yet those who practice pharmacy will hardly fail to acknowledge the usefulness and novelty of communicating detailed practical results that have accumulated from carefully conducted experiments.

The apparatus is described in the order in which it is best made by the workmen. The scale of the drawings being one twenty-fourth of an inch to the inch, the measurements are omitted in description.



a. Stand for the still, made by screwing together two thicknesses of 2 inch pine plank, crosswise to prevent warping by the

heat. The block thus made is turned out in the center in the form of a cup or pan with flaring sides. Into this depression a sheet of lead of 8 lbs. to the square foot, is made to fit accurately, by hammering, being allowed to project an inch above the surface of the stand.

b. A length of 15 feet of "extra strong  $\frac{1}{2}$  in. lead pipe," is next made into a worm or coil of the form of a compressed mattress spring; that is, one flat, or "flemish" coil above the other, the two being continuous in the center. This coil is let down into the wood and pan so that the entrance and exit pipes are held within the thickness of the stand, and so that the upper coil rises but little above the brim of the pan. Where the entrance and exit pipes pass through the leaden pan, the lead is "chased" up carefully into contact with the pipe, and the joints soldered outside the pan. A piece of  $\frac{1}{2}$  inch iron pipe with a screw thread on one end, is soldered by the other end to the lower lead pipe for convenience in connecting the apparatus up to the steam openings from the boiler; and a  $\frac{1}{2}$  inch "globe valve" is attached to the upper lead pipe in order to regulate the steam exit, and consequently the pressure and temperature in the coil. The joints of the iron and lead should be "bolt joints" and not "wiped joints," as the latter, though neater in appearance, invariably leak under steam pressure. About 13 feet of coil should be within the pan, giving a surface of steam contact for heating, of say 234 square inches.

c. A piece of the same kind of lead pipe is fitted closely into the center of the bottom of the pan, soldered outside, and then well caulked or "burned" inside, by melting the lead contact surfaces together. This serves both as a feeding and discharge pipe for the still. For feeding, it is fitted with a cork, perforated with a small glass tube, and a piece of small india rubber tubing long enough to reach the elevated feeding vessel. This plan of introducing the alcohol has great advantage over that of passing it through a tube within the still, for a tube within the still becomes so heated as to vaporize the alcohol within it, and render the feeding irregular, whilst by this plan the alcohol is very regularly delivered in the bottom and hottest part of the still, and can only get to the surface by passing, in a state of vapor, through the heated acid.

For discharging the still, the cork and tubing are removed, and the pipe bent down at *d*. This obviates the necessity of the troublesome plugs and stop cocks.

*e*. A cylinder of sheet lead, of 6 lbs. to the square foot, is made of a diameter to correspond with that of the inside of the pan at the surface of the stand. The joint or seam in this cylinder is made by "burning" the two edges together, either by red hot irons, or by Dumas' inflamed jet of hydrogen, but best by the irons, as this makes a more solid joint. The lower edge of the cylinder is rasped off upon a bevel corresponding to the inclination of the sides of the pan, and the rim of the pan is scraped bright. The cylinder is then set in its place, and turned a few times till the contact is as perfect as possible, when the outside sulcus is filled up with solder and "wiped" smooth.

A shoulder is next turned upon the upper edge of the cylinder, and the cover and head formed and soldered in place without unusual precautions, as the acid never reaches the solder of these joints injuriously.

*f*. A hole is then bored obliquely into the still at *f*, and a piece of  $\frac{3}{8}$  inch lead pipe fitted tightly into it and soldered outside. Into this lead pipe a tubular thermometer is passed, and the space between the lead and the glass through the whole 2 inches of pipe well filled with a putty made of carbonate of lead, or of sulphate of baryta.

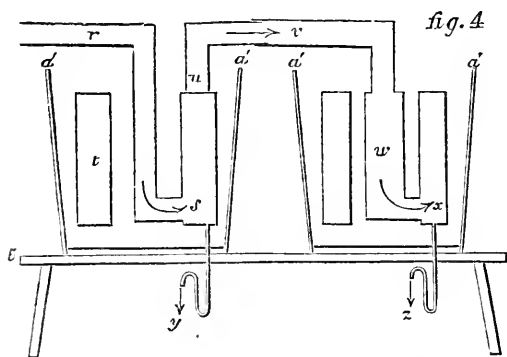
*g*. Another short piece of  $1\frac{1}{4}$  inch thin lead pipe is soldered on at *g*, for charging. This is stopped with a cork.

*h*. On the front of the cylinder, about 13 inches above the rim of the pan, a circular piece of sheet lead is soldered, like a patch, so that the parietes may be double thickness there. Through this patch or outer layer only, a hole  $1\frac{1}{2}$  inches in diameter is bored, by means of a brace and bit. Through the inner layer, or proper wall of the cylinder, a hole 1 inch in diameter is bored, upon the same center as the first hole. This leaves a rabbet of  $\frac{1}{4}$  inch all round the inner hole, into which a piece of retort bottom or other thin glass is fitted and well puttied. This forms a very convenient window by which to regulate the feeding cock during the process. The quantity of the charge should be so regulated that the surface of the acid liquid when heated to boiling should come nearly up to the window, or be

just fairly in sight only; for if it rises to the window no ordinary means will prevent leaking after a short time.

i. An ordinary Liebig's condenser is adapted to the still, and kept cool during the process, by a current of water entering through india rubber tubing at *j*. The water from the exit pipe *k*, is conducted by india rubber tubing into the first, or alcohol condenser tub as required, to regulate the temperature of the water there to about  $105^{\circ}$ .

l. A curved piece of thin  $1\frac{1}{2}$  inch lead pipe is fitted to the end of the Liebig, having a small lead pipe *n* soldered into it at *m*, to give exit to the watery acid liquid condensed in the Liebig. This small lead pipe is "trapped," or bent so that a portion of it may be always filled with liquid, and vapors thus prevented from escaping. The farther extremity of *l* fits into pipe *r* of the first, or alcohol condenser at *o*, and is regulated in its length and inclination by the highth at which the condensers stand. It should be quite as long as represented, and with quite as much rise.



*a'*. Two tubs for the first and second, or warm and cold condensers. The first for separating the alcohol from the ether vapor, is largest, in order to accommodate the larger quantity of more

expanded vapors. The first tub is kept filled with water at  $105^{\circ}$  to  $110^{\circ}$ , and the second with ice, or cold water.

*b'*. A common stand for the two tubs.

These condensers and tubes, made from 3 or 4 lbs. lead, or from well tinned iron, are essentially hollow cylinders, with an inside vertical partition, to prevent the vapors from passing through them without circulation. The vapors are conducted by tubes *r* and *v* into these hollow cylinders at *s* and *x* in front of the vertical partition *u'*, fig. 2. The vapors must then pass entirely

round within the hollow cylinder to get exit, as vapor by *u*, or condensed by *y* and *z*, these three outlets being upon the side of the vertical partition opposite to the inlets. The condensers are each furnished with three sheet iron feet about 3 inches high, upon which they stand, and by which they are fastened by screws to the bottoms of the tubs. All the tubes and passages are made large to provide for the slow circulation of the vapors, as this slow circulation is *the* important point in condensation.

The still as described, including the thermometer and "globe valve," cost 45 dollars, and the remainder of the apparatus, except the Liebig, which is for general use, cost about 40 dollars, or less.

The best practical charge and proportions of materials at which I have as yet arrived, for this still are,

Of Alcohol      s. g. .820       $3\frac{1}{2}$  galls. = 23 lbs. 12 oz. av.

" Sulph. Acid "   1.846       $2\frac{1}{4}$  "      = 34 "      3 "      "

This mixture commences to boil at  $260^{\circ}$  to  $264^{\circ}$  with foaming for a few moments at first, but soon settles down to a steady ebullition at  $266^{\circ}$ , its true boiling point. As far as my experience goes, this  $266^{\circ}$  is the most economical temperature for etherification with such materials. Hence, a coincidence between the boiling point of the mixture (and a mixture can be made, that will boil at any desired point between  $176^{\circ}$  and  $620^{\circ}$ ) and the best temperature for etherification is the desideratum in this process. A mixture like that of the U. S. P., which boils much below the temperature for etherification, drives over much undecomposed alcohol; whilst a mixture whose boiling point is much above the point of etherification, produces more light oil of wine and olefant gas.

The above mentioned charge, at a distance of 16 feet (of conducting pipe) from the steam boiler, is easily kept boiling with a pressure of 40 lbs. to the square inch in the boiler, and although the process will go on well with a pressure of 35 lbs., yet not so conveniently or rapidly.

At least 18 gallons of alcohol may be fed economically into this charge in 12 hours, and about 14 gallons of crude ether of s. g. .747 obtained. The alcohol and ether obtained, beside, from the first condenser, will be equal in value to the acid and half the fuel. Such is a rough estimate of the crude products of one day's work.

In working the apparatus for three consecutive days, however, 55 gallons of alcohol, and 101 lbs. of sulphuric acid were used. From these materials  $26\frac{1}{2}$  gallons of rectified ether, of s. g. .728 were obtained. Beside this, 5 gallons of alcoholic ether s. g. .795 (for tannic acid process) and  $2\frac{1}{2}$  gallons of alcohol s. g. .840, were obtained as collateral products from the same materials.

This is what the apparatus has done, but with more experience and better management it is doubtless capable of doing better, so that at the next operation there is reason to expect a yield of 28 gallons of ether s. g. .728 from 51 gallons alcohol s. g. .820, and a value in collateral products equal to the expenses of the process, if wear and tear of apparatus be excluded.

An improvement that suggested itself at the last operation, but which as yet has only been experimentally tried, appears likely to render practicably applicable the method of Soubeiran, by which he proposed to obtain pure concentrated ether at one operation. This consists in substituting for the ordinary Liebig's condenser, a special one of the construction shown in figure 3.

A layer of sponge or curled hair being placed at *a*, the large tube is to be loosely filled with lumps of the dried residue of the ammonia process, (chloride of calcium and hydrate of lime,) or, more loosely still with lumps of quick lime. The hot vapors are thus deprived of acid entirely, and of water, in a measure, and both the alcohol and ether are obtained in good condition. But how long the good effect would continue to be produced without renewing the contents of the cooler, remains yet to be determined, whilst upon this point the practicability of the plan entirely depends.

If this fails, however, there is no good reason why the mixed vapors from such a still might not be made to bubble through a warm solution of chloride of calcium and milk of lime before reaching the condensers, provided the feeding vessel be sufficiently elevated to oppose the increased vapor tension in the still, and provided the proportion of alcohol in the charge be so varied as to maintain the same boiling point under the increased pressure.



I am not aware that Soubeiran's idea of obtaining ether at one operation has ever been successfully applied, if it has, the methods and results have not been published.

*U. S. Naval Laboratory, New York, July 1856.*

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NOTE ON THE STRENGTH OF COMMERCIAL ALCOHOL.

By JOHN BUCK.

Prof. Procter:

Dear Sir,—I have read in the journal the article of Mr. Mead, also the replies of Mr. Sharp and Mr. Pile, and it does not seem to me that either of them explain the dilemma in which Mr. Mead seems to be with regard to his alcohol. Mr. Sharp says nothing about it, merely answering his question on the Government standard of the different proofs, and Mr. Pile congratulates Mr. Mead on his getting a better article than he contracted for, an *accident* which he is confident does not occur elsewhere. Now I do not think it is a matter of accident, nor that he got a better article than he contracted for, but whether it is peculiar to this vicinity I cannot say. I do not consider myself capable of giving a scientific explanation of the subject, but having got into the same dilemma, and having arrived at the same results of which he speaks, I was led to look into the subject, and will state to you how I explained the matter to *my own* satisfaction.

I had tested several barrels of alcohol which I purchased at different times, which were marked 80 per cent. and had found them to be 90 per cent. by volume; I concluded there could be no mistake, but that 80 per cent. with them must be different from what I understood as 80 per cent.

I took some pains to enquire of different distillers, what per cent. by volume they represented by their 80 per cent. alcohol, and I found they did not seem to understand much about the use of any other instrument except the one used by themselves, (it is not the same as those used by Government.) The only information I could get was, that when they say a spirit is 80 per cent. they mean that 100 gallons of that spirit will require 80 gallons of water to reduce it to proof spirit; that is, 100 gallons of 80 per cent. alcohol is equal to 180 gallons proof spirit, (100

of 90 per cent. is equal to 190 proof; 100 of 70 per cent. to 170 proof, and so on,) proof spirit being equal parts by measure of pure alcohol and water.

Now take Mr. Mead's statement; he says "he bought his alcohol for 80 per cent. and found it to be sp. gr. 0.834, which would be nearly 85 per cent. by weight, and 90 per cent. by volume." If it was 80 per cent. (according to the distiller's scale) 100 gallons of that alcohol would make 180 gallons of proof spirit; now proof being equal parts of pure alcohol and water, it would be composed of just 90 gallons of pure alcohol and 90 gallons of water; therefore the alcohol which he purchased would contain 90 gallons of pure alcohol in 100 gallons, or in other words it would be just 90 per cent. by volume, or about 85 per cent. by weight, which will correspond with his and my own experiments.

If the distiller's scale is as I state it, am I right in my conclusions? If I am, and if it is a rare thing to find it elsewhere, our distillers deserve credit for making their alcohol so near the standard laid down in the U. S. Pharmacopœia, which is sp. gr. 0.835 or 85 per cent. by weight.

I do not know the fact, but infer from the statement of the distillers, that the hydrometer used by them is Sike's, or one of similar construction, and that perhaps it may more properly be said to be 80 per cent. *over proof*.

I see that Mr. Gutteridge, in his tables, would give the sp. gr. 0.835 to be very near 57 per cent. over proof, but Pereira in the article on alcoholometry says that Mr. Gutteridge's statement does not coincide with experiments which he has made on the same subject.

I was much pleased with the remarks of Mr. Pile on the difference in hydrometers, as it explains to me what I have been trying without success to solve. I purchased of Mr. J. Wightman, Boston, one of Luhme & Co.'s alcoholometers, graduated by Tralles & Richter's scales; after taking it home, I tried it with some alcohol, to see how it agreed with the tables in Wood & Bache's Dispensatory, and to my surprise it gave a different result. Then to determine if either was correct, I took it to the Custom House, and through the kindness of Mr. Lewis tested it with their's, (supposing I could depend upon their's as a standard instrument, it being made expressly for Government use;) the

result was, that the Tralles scale on my instrument agreed with their's in every trial. I then concluded the trouble, if any existed, must be in the Richter scale; but how one scale should be perfectly correct and the other wrong, I could not understand, supposing that after they had graduated one correctly, it would be just as easy to adjust the other to it right, as to have it wrong. I tried to find a table of Richter, but without success. I then applied to Mr. Wightman for an explanation. He had just received a new lot, and we compared them together and found them to agree with the one I had. He said he was about sending an order to Berlin for some more goods, and if I would make a statement of the trouble I found, he would send it to the fountain head for explanation. I did so, stating the disagreement I found between Richter's scale as appeared on their alcoholometer, and all other tables for alcohol by weight that I could find. The reply came in a letter to Mr. W., containing matters of business, therefore it is in his possession; but the amount of it was, that they knew nothing about the tables which I mentioned, but that Richter was correct, and that their alcoholometers were made strictly by his scale, and were warranted correct both by volume and by weight. They referred me to page—Ure's Dictionary for Richter's scale, but I have not been able to find it either in the American or English edition.

The Government alcoholometer as used in the Boston Custom House, is made of glass, with a thermometer connected: they are manufactured expressly for Government, in Berlin. They have but one scale, and that is Tralles', so that all their liquors are marked so much *by volume*.

While at the Custom House testing my hydrometer, I saw the book of tables used in connection with their instrument, from which I copied the following:—

*Government Standard of Proofs.*

| 1st proof anything, |   | 50        | per cent. by volume. |   |
|---------------------|---|-----------|----------------------|---|
| 2nd                 | “ | from 50   | to 53.3              | “ |
| 3d                  | “ | “         | 53.3 to 56           | “ |
| 4th                 | “ | “         | 56 to 67.7           | “ |
| 5th                 | “ | “         | 67.7 to 79.3         | “ |
| 6th                 | “ | over 79.3 |                      | “ |

Hoping I may have thrown a ray of light on the subject referred to,

I remain yours truly,

JOHN BUCK.\*

*Chelsea, Mass., July 8th, 1854.*

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IMPROVED METHOD FOR CARBON AND HYDROGEN DETERMINATIONS IN ORGANIC ELEMENTARY ANALYSIS.

By EDWARD R. SQUIBB, M. D., U. S. Navy.

Assistant Director U. S. Naval Laboratory.

In making a large number of combustions of substances containing nitrogen (coal analyses for technical purposes,) the writer was led to substitute rolls of copper wire cloth for the copper turnings required to decompose the oxides of nitrogen formed in the combustion tube. These rolls were made from wire cloth of about 80 threads or wires to the inch, by rolling slips 3 inches in breadth, around pieces of glass stirring rod three-sixteenths of an inch in diameter, till the size of the roll was such as to fit easily into the combustion tube. The cut ends of a few of the terminal wires were then bent down and hooked into the meshes of the outer lamina of the roll to secure it from springing open when out of the tube. A number of such rolls, sufficient to fill a long straight tube of the same size as the combustion tube, were made and reduced together at one operation, by hydrogen on the combustion furnace, cooled in a current of hydrogen, the hydrogen displaced with dry air, and the rolls then corked up in the tube for use. These rolls answer the purpose quite as well as copper turnings, and are much more easily, conveniently, and accurately managed, as they may be pushed from the reduction tube into the combustion tube by a glass rod, one after another as required, without being touched, and without any risk of acquiring moisture from the atmosphere. As they are taken oxidized from the combustion tube after the combustion, they are returned to the reduction tube behind the reduced rolls till all have been used, when they are again reduced together as before.

[\* NOTE.—This letter was not intended for publication, but deeming its hints useful to our readers, we have taken the liberty of printing it here.—EDITOR.]

From the convenience and success attending the use of such rolls in this manner for this purpose, it was but a step in the same direction to adopt them, when oxidized, as substitutes for the oxide of copper, in the tube to furnish the oxygen necessary for combustion. A very compact roll, 6 inches long, was made so as to fit the combustion tube tightly, and was forced into its place from the largest end of the tube leaving about 7 inches of the tube behind, and 4 inches before it, vacant. The tube thus prepared was then placed upon the furnace as for a combustion, and the copper surfaces of the roll thoroughly oxidized at a low red heat in currents of dry air and oxygen. The tube was then in condition for immediate use; and each successive combustion afterward left it in precisely this condition, ready for the next succeeding one.

The combustions were made, as is now the common practice, in a thin straight tube open at both ends, protected and supported in a shallow trough of wire gauze. The fuel used was common illuminating gas, supplied through several stop cocks, and burned above a wire gauze after due admixture with air in the common way. The prepared substance was weighed, introduced and burned in a boat-shaped piece of platina foil, fitting the tube well, but easily. A roll of reduced copper was placed behind the boat, and another in the anterior end of the tube. The tube was heated gradually first from the anterior end toward the boat, then from the posterior end toward the boat, and finally the boat itself was heated. The heating and the first part of the combustions were made in a very slow current of air admitted through the dessicators, (concentrated sulphuric acid, potassa, and chloride of calcium) in bubbles about 2 seconds apart. After half an hour, or when the flow of the gasses became slow, the slow current of air was replaced by a more rapid current of oxygen, and this continued till the anterior copper roll became fully oxidized. The heating was then discontinued, and after a few moments a slow current of air resumed for a short time. The results were very satisfactory.

Some of the advantages of the suggested method are as follows.

The copper surfaces only being oxidized, the metallic continuity of the wire cloth serves to distribute the heat equally in all directions, whilst the part of the tube least accessible to the

heat, namely, the center, is occupied by a bad conductor, to the exclusion of any portion of the gases to be burned.

The oxidized copper surfaces fill the tube more perfectly than the oxide of copper by the usual method, and are so easily permeable that the gases more readily and more slowly percolate the roll under circumstances more favorable to perfect combustion. Then as portions of these surfaces are reduced during combustion, the reduced metal does not protect or shield the oxide not yet reduced, from contact with the gases, but from being distributed with or behind the line of deoxidation is in the most active condition, and the best position for decomposing the oxides of nitrogen that may form. Hence, probably, the circumstances, that the reduced roll placed in the anterior end of the tube commonly remains quite free from visible oxidation till the combustion is nearly finished, and may only be necessary as a precautionary measure.

The rolls, by the readiness with which they conduct and distribute the heat, admit of perfect combustion with less intense heating, and thus measurably preserve the tube from being softened, whilst they strengthen and keep it in shape if it softens, so that the distribution and flow of the gases can never be obstructed or rendered irregular by this not uncommon accident to thin and good tubes.

They effect a very considerable economy in time and expense, and require much less skill and experience in order to attain to the same, or a greater degree of accuracy, than by the common method.

On the point of accuracy, however, it is necessary to state that the writer has never used the rolls for furnishing oxygen in any delicate or scientific analyses, neither has he tested the method upon any substance the composition of which was accurately known beforehand. The method is well adapted to the large class of technical analyses daily required, and is suggested that it may be improved in its design and application, for the benefit of the daily increasing number of chemists and geologists, upon whom such analyses devolve. At the same time, in practice thus far, it *appears* well adapted to make analyses of the greatest accuracy.

*U. S. Naval Laboratory, New York, May 1856.*

## NOTES AND QUERIES IN PRACTICAL PHARMACY.

The following desultory observations have been suggested from time to time by the every day occurrences in the experience of the writer. They are thrown together without any attempt at arrangement, and are offered as a sample of what might be put under the above head, so as to form, in time, a very valuable collection, if thoughtful and inquiring pharmacutists would but give their attention to putting on record facts and queries of an analogous kind.

*Compound Syrup of Squill.*—The writer, in reflecting upon the mode of securing the best results in making this preparation, was led to try the experiment of exhausting the squill and senega separately *by displacement*, each with its appropriate menstruum, namely the senega with the diluted alcohol, and the squill with diluted acetic acid, mixing the two solutions thus obtained, evaporating to one half, adding water if necessary after filtration, and proceeding as for syrup. It is believed that the small quantity of acetic acid present in the syrup as thus prepared, acts beneficially in four ways. 1. More perfectly extracting the squill. 2. Preventing the crystallization of the sugar. 3. On the other hand obviating the tendency to fermentation in the syrup. 4. As an adjuvant in the solution of the tartar emetic. In preparing the squill for displacement a handful of well washed sand thrown upon it will enable any one to triturate it to a magma in a wedgewood mortar after it has been swollen by maceration. I prefer this practice, because I am sure that the root is thus sufficiently divided to enable the menstruum to extract all the soluble portion, while in most samples that I have seen, it is in such a condition that if put into a mortar it cakes under the pestle, or in a mill it will clog it so as to render it impossible to grind. I have obtained on two occasions the most satisfactory results from the process above adverted to.

*Colchicum Seeds.*—Can you or any of your correspondents give me a hint as to the best method of reducing these refractory little nodules to powder? I have tried them with pestle and mortar and with mill, and subjected them to the action of steam until they were partially torrefied, but with very unsatisfactory results. I wished to prepare the wine of colchicum seed, and

was obliged after a two days' skirmish with four ounces of them, to put them into the menstruum not half so well powdered as I could wish.

[We know of no better method of comminuting these seeds, than by first drying them well and then subjecting them in small quantities at a time to the action of the pestle in an iron mortar. Every thing depends on the proper relative curves of the pestle and mortar. They should have nearly the same radius.—EDITOR.]

*Displacement Process.*—One hint to beginners. See that your lower diaphragm fits well, and that the cloth stretched over it is equally engaged all round its edge, between it and the body of the instrument, else you may have your packing to do all over again from the clogging of the beak. Another thing, you can pack arnica and chamomile, and substances of similar texture, much more evenly and closely, after putting them through Swift's drug mill, or some similar machine, than you can without so doing, and obtain a better result.

*Tinctura Ferri Muriatis.*—I have noticed one or two articles upon this subject in recent numbers of the journal, and now offer a suggestion. Is not the difficulty complained of and often experienced in dissolving the carbonate of iron in the acid, due to the careless preparation of the former? I am induced to believe so, from a recent occurrence in my establishment. A lady to whom I had sold two ounces of the carbonate of iron, returned it on account of the difference in taste and therapeutical effect from what she had experienced from other samples which I had sold her. I immediately examined it and found indeed that it was, to say the best, a very carelessly made preparation. There was some chalybeate taste, but a nauseous saline taste was the most marked feature. It was not subjected to analysis, because a notable mixture of sulphate of soda was too evident to be mistaken. This occurrence suggested the query whether the difficulty of dissolving some samples of carb. ferri in muriatic acid might not be due to some impurity of the salt. And I am the more disposed to think so, as the last time I made tinct. ferri muriatis, the carbonate of iron employed was entirely dissolved by the acid, without the aid of heat, or anything else but stirring with a glass rod.\*

\*[NOTE.—The difficulty arises most frequently where the acid has the proper strength, not from impurity but from the dehydration of the subcar-



"*More Poison in Soda Water.*"—How much soda water is impregnated with metallic carbonates in consequence of fragments of solder and chips of copper lying loose on the inside of the fountain? I ask this question, because this spring I received a new fountain, just from the machinist's hands, and hearing a rattling on the inside, I went to work and extracted between two and three ounces of drops of fused solder, as well as a chip of copper which were lying at the bottom of the fountain. *Verbum sapientibus sat.*

H. T. C.

Portland, Me., July, 1856.

## NOTE ON SYRUP OF POPPIES.

Prof. WM. PROCTER, JR.:—

DEAR SIR,—All the formulas given for the preparation of syrup of poppies are too tedious for the operator, unless it is when time is of no object. I therefore wish to communicate to you and to the readers of the Journal, a very simple and easy method for the preparation of this syrup, and which, when well made, will be permanent.

The best formula which I have yet seen, is that of yours, published in "*Parrish's Practical Pharmacy*;" but those who are familiar with displacement, can prepare it in the following manner:—

|                      |            |
|----------------------|------------|
| Take of Poppy heads, | 9 ounces.  |
| Diluted alcohol,     | q. s.      |
| Sugar,               | 15 ounces, |
| Best French brandy,  | 2 drachms. |

Deprive the poppy heads of their seeds, reduce them to a coarse powder, moisten them thoroughly with diluted alcohol, and digest for forty-eight hours, then transfer the whole to a percolator, and gradually pour upon it diluted alcohol until two pints of filtered liquor are obtained; then evaporate by means of a water bath to

bonate of iron by heat in order to give it the bright red color that has, commercially speaking, become an index of good quality. When subcarbonate of iron is made strictly by the U. S. Pharmacopœia, it approximates to an umber brown color, and retains two equivalents of water besides eight or ten per cent. of protocarbonate of iron, which favor its solubility in acids.

—EDITOR]

eight fluid ounces, filter, and, having added the sugar, proceed in the manner directed for syrup. When cool, add the brandy and mix.

This affords a preparation about equal in strength to the one given by you.

Yours, truly,

CHAS. W. EPTING.

*Pottsville, June 23d, 1856.*

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#### PURIFICATION OF ACETIC ETHER.

By C. RUMP.

Becker of Essen has shown in 1852 that crude acetic ether, purified in the old way by shaking with a solution of some salt, and taking the lighter liquid for the pure ether which only wanted another rectification, still contains alcohol, sometimes 30 per cent. To obtain the ether pure according to Becker,  $3\frac{1}{2}$  times its volume of a solution of table salt, or five times its weight of the same is necessary; he also found that of water  $3\frac{1}{2}$  times the weight of the ether was necessary, which however dissolved so much of the ether, that this method was rejected as impracticable. This action of water and watery solutions of salts is due to the affinity of alcohol and water, which however is not equal to that of the ether for alcohol; they must be separated by repeated washing, a purer ether will extract alcohol from the aqueous solution.

After a number of experiments the author has come to the conclusion, that the best method for the purification of acetic ether is by shaking the crude product with one quarter its weight of pure water, separating the ether and repeating the same operation three times more; the water may be saturated by chloride of sodium which separates a quantity of ether that requires washing in the same way. To the washed ether 1-12th its weight of chloride of calcium is to be added, and another distillation yields the pure ether, which shaken with its volume of water, loses but eight or nine per cent of volume.

Thus treated 33lbs. of crude ether yielded 24lbs. of pure ether, and the water 5lbs. more; the process is simple and the operation requires but little time.—*Archiv d. Pharm. March 1856.*

J. M. M.

## ON GOSSYPIUM HERBACEUM.

By ROBERT BATTEY, of Rome, Georgia.

*(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)*

This plant, belonging to the natural order Malvaceæ, is classed by Loudon under Monadelphia polyandria. He describes it, "leaves 5-lobed, 1 glandular beneath; lobes round mucronate, involucre serrate; stem smooth." This description, although probably true to nature in the uncultivated plant, is nevertheless very faulty when applied to the great agricultural staple, cotton. A more strikingly characteristic one will be found in Carson's Pereira, edition 1854, vol. ii. at page 986. This doubtless is the species which yields the great mass of the cottons exported to Europe, and consumed in our own country in our various domestic fabrics, and which is known to the trade under the commercial technicality of Georgia Uplands. There are two other commercial varieties probably derived from different species, known as Sea Islands and Nankin. The former is perhaps the *Gossypium barbadense* of Loudon, and of the Nankin I find no account in any of the works to which I have referred.

As an article of trade, the Georgia Upland variety is by far the most abundant and useful. It is the staple from which all our coarser cotton fabrics are manufactured: osnaburgs, duck, sheetings, shirtings and print cloths, Canton flannels, drillings, calicos, muslins, cordage, &c., &c.

Cotton occurs in the trade of various qualities or grades, designated as "fully fair," "fair," "good midlings," and "stained." The plant, or shrub rather, which bears the cotton lint, attains a height of ten or twelve feet under favorable circumstances, usually an average of say five feet. It blossoms in June and July, and continues this flowering, as also the growth of the whole plant, until arrested by the winter frost. The color of the flower is stated in the books to be yellow; this is correct, although they are frequently to be seen in the cotton fields of any shade, from white to dark brown, passing through the various shades of yellow and red, not unfrequently variegated. The bud which precedes the flower, is termed by the planter a square, but is, in fact, triangular in shape; the calyx being three-lobed, and inclosing a tripetalous corolla. The picking season commences

about the first of September, and is continued regularly on until the plant is stript of the lint, say first of January, or even the first of February if the planter has "over cropped himself." The first picking is generally of second quality, the lower "bolls" next the earth, opening always first, are soiled with dust. And again, the plant is not sufficiently mature to produce the best quality of staple. The second time over, if the weather is favorable, is the best. "Last round" has generally been injured by the frost "stunting" the immature bolls or capsules, and it goes into the general sorting as stained cotton. The qualities intermediate between the best and worst, arise from various causes, among which are—1st. Faulty "ginning." This is done on the saw gin invented by Whitney, variously improved by more modern inventors. The saws are closely set upon a shaft, and revolve between polished iron bars. The lint is caught by the hook-shaped teeth of the saws, and being forcibly drawn through between these bars, is torn loose from its attachment to the seed. If, in this process, the motion of the gear (as the propelling machinery is termed,) be too rapid, the sudden force exerted on the centre of the fibre breaks it in two, and thus shortens the staple and renders it unfit for spinning good yarn. 2d. If the cotton be picked late in the season, as a portion of it must be, the crisped leaves often overhang the lint, and are picked off with it, and being cut up by the gin in the subsequent process, injures the product. 3d. A heavy beating rain throws up dust and fine particles of sand on the wet lint, and it thus becomes more or less stained. This latter difficulty is partly remedied in the ginning.

The color usually preferred by the dealers in cotton, is not pure white, nor is it yellow or stained, but rather a soft, delicate creamy shade, with pearly lustre. A more important point perhaps than color, is the quality of the staple, which should be long and unbroken.

It comes to market packed in square bags, weighing variously from 400 to 550lbs. They are put into this form by means of the "packing screw," a tall, rude, unwieldy and unsightly apparatus, which, strange to say, has never yet been superceded by some better and more economical arrangement. Many have been very ingeniously devised, but none offering any decided ad-

vantages over the old for general use. The bags or bales are usually about 5 by 3 by  $2\frac{1}{2}$  feet in dimensions, which, at the port of shipment, are compressed by powerful steam machinery into less than half their former size, for economy in freighting over the ocean. The standard bale of cotton, in estimating crops, is taken at 400lbs., so that a plantation sending to market 800 bales, weighing an average of 500lbs each, is usually said to have made a thousand bags of cotton.

The Sea Island cotton differs from the Georgia Uplands in the much greater length of its staple, and hence is often called the long staple cotton. It is also softer and more silky to the touch, and possesses a richer creamy lustre. The characters of the seed distinguish the two readily; that of the former being black, rather glossy, though not decidedly so unless rubbed, when they readily take a polish; the lint does not adhere to the seed. In the Uplands, the seed has a dirty green color in mass, arising from the short fuzzy down which adheres very strongly to the surface. When this is removed, the dark chestnut brown capsule is seen enclosing the seed. The lint here adheres to the seed, and is broken loose in the ginning, often leaving short portions attached to it.

The long staple or Sea Island, as its name indicates, was formerly cultivated only in the islands and adjacent sea coast, but it is now successfully grown throughout the interior of Florida and along the Southern borders of Georgia, Alabama, Mississippi, Louisiana and Texas. The roller gin used in preparing this variety for market, consists essentially of two cylindrical wooden rollers, revolving in opposite directions on each other, catching the lint between their adjacent surfaces and drawing it away from the seed, without danger of crushing the latter, so slightly is the lint attached.

This variety of cotton yields much less abundantly than the former, and is more difficult of cultivation and preparation for market; hence commands a price proportionably higher, sometimes even five times that of the ordinary. In consequence of its greater length of staple, it spins a very strong thread, and one which may be drawn out to a much greater degree than the shorter fibre. This property admirably fits it for the manufacture of sewing threads, and for the beautifully attenuated gossa-

mer fabrics which adorn the persons of the gentler sex. As the strong pressure of the packing screw would injure the appearance of the fibre, it is generally brought to market in round bags, much in the style of wool sacks, weighing from 275lbs. to 350lbs.

The Nankin cotton was introduced into this country early in the history of our cotton trade, and cultivated to a considerable extent for its beautiful buff or nankin color, and was highly prized by the Southern planter for his summer clothing. It commanded a high price for many years, but at length the ingenuity of the chemist and dyer produced the Nankin from the ordinary Uplands, and at prices so low as effectually to exclude the former from market. It is still, however, cultivated on a small scale, chiefly for domestic manufacture. Its price ranges from 20 to 30 cents the lb. The staple is intermediate between the Uplands and Sea Island.

Upland cotton may be stated as a fairly remunerating crop to the planter at 8 cents per pound, and the long staple at, say, 23 cents. The mass of the former would probably be classed as "good midlings." Extremes in price to the Georgia planter for this variety, say  $4\frac{1}{2}$  to 13 cents. In the competitions of trade, it has grown to be a custom among "buyers" to pay from 2 to 5 cents (not often the latter) over the fair market value for the first lot of cotton offered in their locality. The annual crop of our Southern States is estimated in round numbers at 3 millions of bags. The average crop to the acre at 800lb of "seed cotton," yielding from 30 to 33 per cent. of marketable lint. Average crop "to the hand" 4 to 5 bales. Extremes 2 to 10. In reckoning hands, a boy is classed as  $\frac{2}{3}$ ,  $\frac{1}{2}$  or  $\frac{1}{3}$  hand, as his age and ability may dictate. In these estimates the "force" is supposed to make also the breadstuffs, vegetables, fruits and forage consumed by man and beast. The late picked cotton yields more in weight of seed and less of lint.

This product of the cotton plant, viewed in the light of its commercial and economical importance, becomes one of deep interest to every one. It affords us a cheap and most valuable clothing material for the masses, which nothing else could replace. It gives employment to millions on millions of laborers, and a productive activity to billions of monied treasure. There is no

civilized nation upon the globe, which does not, more or less, feel its influence. It has been stated, and I doubt not truly, that this crop in its production, manufacture, and distribution, employs more capital than all the other agricultural staples of our country combined, and what is perhaps of greater moment than all this, it determines the destiny of more than four millions of human beings in our own country alone, riveting immoveably the chain which binds the slave to his task in the cotton-field. But there is another view of this subject which is more to my purpose now, viz:—its chemical characteristics, as well as the fitness of the refuse seed and root for a wider and more useful application in medicine and the arts. The lint has, within a few years past, been introduced into the officinal list of our *Materia Medica*, and used as an application to recent burns and scalds, and for the preparation of collodion. The other portions of the plant are as yet non-officinal. With the officinal lint I had designed having nothing to do, at least as its chemical and medical properties are concerned, but the interest which it has for me, as the staple agricultural product of my native State, has prompted me to speak thus briefly of it.

The root of the cotton plant sends down a main spindle to a depth of from 12 to 24 inches; from this branch off in all directions numerous lateral rootlets, being large and long near the surface of the soil, smaller and shorter as they descend, giving the entire root the form of an inverted cone. In color, the cortical portion is of a bright yellowish brown, the ligneous a light yellow. *Taste*.—In the dry state the first impression is very slightly sweet, otherwise very much that of the *Radix Glycyrrhiza*, subsequently a decided astringency, unaccompanied by either bitterness or acrimony.

With one exception, which I shall presently notice, no practical application of this root has come under my observation or within the limits of my reading. Extensive as its production is, so far from its answering any useful purpose to the planter, he considers it rather an encumbrance to the free tillage of the soil, not in his estimation answering any good end worth counting upon as a fertilizer.

The exception to which I have referred, is based upon an article from the pen of Dr. Bouchelle, of Mississippi, contributed to the

“Western Journal of Medicine and Surgery,” for August, 1840, in which he states that he has been in the habit of employing a decoction of the root, made by boiling four ounces of the inner bark in a quart of water to a pint measure; of this he administers a wine-glassful every twenty minutes, in cases of protracted labor, to promote the contractions of the uterus. He considers it not inferior to ergot in such cases, and he employs it largely as an emmenagogue also. He further states that it is habitually employed by the negroes of the South for bringing on abortion, successfully, and this without injury to the general health. I may remark that no case of its use, in any form, has come to my knowledge, through the section of the South in which I reside. Indeed I feel confident that its properties in this regard, as set forth by Dr. Bouchelle, are not at all suspected among the masses, either whites or blacks, in my vicinity. The small number of abortions from any cause with us confirms this impression. Fifteen years have now elapsed since the appearance of Dr. Bouchelle’s article, and yet the cotton root seems not to have gained favor with the medical profession, and indeed his experiments are scarcely remembered at all. This want of success cannot be attributed to a deficiency in supply of the raw material, at least in the South. Is it then inert and useless? or was the form in which the proposed remedy was to be exhibited so objectionable as thus to consign it to oblivion?

The seed of the cotton has commanded more attention than the root. It was announced many years ago, that the seed contained a fixed oil in large quantity, which promised to be valuable; so much I have heard reiterated over and over again from my boyhood up; but have yet to learn of any valuable use which has grown out of the discovery. The oil I have never seen. A popular notion prevails to a considerable extent with us, that it is used in the adulteration of linseed oil. This is doubtless an erroneous idea, but often serves the careless painter a good turn, in bringing the oil man between himself and his dissatisfied employer, and he thus escapes on the plea of cotton-seed oil. The seeds are esteemed a valuable stimulating manure, and are chiefly employed for this purpose. They are thrown into heaps and allowed “to heat.” This process of fermentation sets very soon, if the seed be damp, and continues until the vitality of the



germ is lost. The seed is then ready for application. Corn is the crop thought to be most benefitted by them; merely a handful of the seed is dropped into each hill of corn, the grain dropped on top, putriferous fermentation soon commences, and by the heat as well as the gases evolved, stimulates the sprouting grain. The cotton-seeds are by many highly esteemed as food for cows during the winter months. I use them habitually for this purpose. They are very fond of them, and what is a little surprising of the lint also, the latter they will eat with avidity and in large quantities when they have access to it. Cotton-seed is said to have been used, with marked beneficial results, in the treatment of intermittents. Prof. H. R. Frost, in the Charleston Medical Journal, May, 1850, states on the authority of Dr. W. R. Davis, of Monticello in that State, that these seeds were often used, and with uniformly successful results, by a planter of Newberry District, who first discovered their remedial power. He recommends a pint of the seed in a quart of water, boiled to a pint, and one fourth to be administered to the patient in bed. Notwithstanding the very high estimation in which these remedies seem to have been held by the several parties reporting on them, it would seem they are not thought worthy of general introduction by the profession at large. One reason for this seeming indifference may be found in the very large doses of crude material in the form of decoction, necessary to produce the desired effect, such treatment is not to be expected to gain favor in this age of concentrated remedies, attractive to the eye, and little as may be repulsive to the taste. Hence if it be found that the root and seed of the cotton contain principles of remedial value, and they are destined to play any conspicuous part in the treatment of disease, we must look for it in some more active and more inviting forms than have been heretofore presented.

In selecting this subject for my thesis, several inquiries suggested themselves.

- 1st. Does the root or seed of the cotton possess medicinal properties of any value?
- 2d. If so, in what proximate principles do these properties exist?
- 3d. In what most eligible forms shall they be exhibited?
- 4th. Can the root be made available in the arts for any valuable purpose?

5th. What is the nature of the oil from the seed, and to what valuable use may it be applied.

It has not been my expectation, by any means, to offer satisfactory answers to any of the queries indicated on the present occasion. The subject is one of deep interest and one of which I desire to pursue in detail, this my other engagements will not permit at present, but I have chosen to spend what hurried hours I could upon it, and offer it in this crude state, with the promise of something more definite in the future.

While absent on a brief visit to my family in the month of December, I procured some bark and fibres of the cotton root, taken after the lint had chiefly matured. The root had not been touched by frost, and was consequently in the green state. It was dried, ground to a coarse meal, macerated in diluted alcohol for 48 hours, transferred to a percolator and exhausted with the menstruum. Alcohol of 90 per cent. was then added until it passed clear. The tinctures thus procured were evaporated separately to the consistence of a soft extract, mixed together and treated with water, left behind the dark red substance marked "A" in the accompanying samples. This was treated with strong alcohol, and filtered from a dark red friable mass marked "B," which was almost entirely insoluble in water, alcohol, ether and chloroform.

The alcoholic solution, on standing exposed, deposited gradually a sediment corresponding, in all respects, so far as examined, to sample "B." This solution was evaporated to dryness and marked "C," and was then only partly soluble in alcohol.

The aqueous solution evaporated to dryness was found to contain sugar; marked "D." All these solutions had the deep red color, less marked however in the aqueous than alcoholic. Both had a marked astringency to the taste, more intense in the alcoholic. This was tested as follows:

Gelatine was precipitated.

Starch precip. light brown sol. remains.

Albumen precipitated.

Hydrochloric acid precip. beautiful light cherry.

Sul. acid precip. bright cherry insol. excess.

Nitric acid dil. precip. cherry; strong acid destroys.

Phosphoric acid precip. light reddish brown.

Boracic acid no change.

Acetic acid precip. bright cherry.

Tartaric " " " " not entirely.

Citric " " " " "

Oxalic " " " " "

Potassa precip. dark brown, soluble in excess.

Ammonia slight change of color only.

Carb. potassa precipitates partially.

Carb. soda no precipitation, very little change.

Tart. emetic no change.

Acet. lead scarlet precipitate.

Proto salt iron precip. dingy black.

Per salt iron precip. brownish red.

Basic acet. iron scarlet ?

Yellow pruss. potash precip. red, partial.

Corrosive sublimate precip. red.

Sul. cinchonia " insoluble in acetic acid.

Lime water " dirty greenish.

Chloride of calcium " without change of color.

Proto salt tin " dark red.

Sul. copper " brownish red.

Basic chlor. iron " " black.

Litmus sol. is reddened ? not very decisive.

Per acet. iron, cold no change; hot salmon precipitate.

The tincture diluted to any extent with water retained its transparency. This diluted solution was used in the tests.

These tests I do not of course attach any particular importance to. I give them simply for what they are worth. They will serve me a purpose in feeling my way along.

The same tests were applied to a solution similarly obtained from catechu, with results agreeing for the most part, but widely differing in some points.

I submit specimens of dyes obtained from the cotton root, and also from catechu, for comparison. The samples are so roughly executed, I forbear any comment on them or the processes by which they were obtained, except only to remark that they are very permanent, most of them having been well scrubbed with soap.

The crude material was subsequently treated with water acidu-

lated by  $\text{HCl}$ ; solution precipitated by ammonia; precip. was redissolved and reprecipitated. An accident contaminated the result with phosphate of lime, and the presence of other engagements precludes the idea of a further examination of the mixture.

The results of my labor, a portion only here stated, are meagre and unsatisfactory; they are sufficient, however, to inspire the hope that my future investigations may develop facts interesting, and I hope also useful in their character, from the refuse matters of the *Gossypium Herbaceum*.

## ON THE PREPARATION OF DEUTOXIDE OF LEAD.

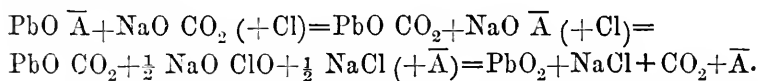
BY FERD. FEIST MAYER.

To the Editor of the American Journal of Pharmacy:

DEAR SIR,—The process given by Prof. Woehler, and mentioned in the last number of your Journal, produces a perfectly pure deutoxide of lead, and is certainly a very expeditious method for those to which the disengagement of gaseous chlorine is not combined with any inconveniences.

As this is, however, very often the case, you will allow me to mention a different way which I have followed in preparing larger quantities of the deutoxide, and which yields as much and at least as cheap a product as Woehler's.

In the latter, the action of chlorine on the protoxide of lead is mediated by the formation of hypochlorite of soda and chloride of sodium.



An alkaline solution of a hypochlorite, as, for instance, that formed by decomposing chloride of lime with sulphate of soda and an excess of carbonate of soda, or the officinal Labarraque's solution, will therefore act precisely in the same manner on any compound of oxide of lead. Of the latter, even for analytical purposes, the brown acetate and the sulphate of lead furnish the same products as the more costly salts.

I decompose the chloride of lime as given in the U. S. Pharmacopœia under liquor sodæ chlorinatæ, and pour the decanted

or filtered solution into that of the lead salt, or to the sulphate diffused in water, and heated nearly to boiling, as long as a precipitate forms, or the intensity of color increases. After the brown oxide has settled, the supernatant liquid is drawn off and the precipitate repeatedly washed.

The presence of free alkali or of carbonate or acetate of soda is essential, since they serve to decompose or dissolve any chloride of lead forming.

In regard to Overbeck's method of preparing the deutoxide, it must be carried in mind, that, although the ferrid-cyanide of potassium serves to oxidize the protoxide of lead in an alkaline liquid, as soon as the free alkali present is taken up by the ferro-cyanide or converted into carbonate from the air, an inverse reaction takes place. For

$KO + PbO + K_3 Fe_2 Cy_6 + Aq = PbO_2 + 2 (K_2 Fe Cy_3) + Aq;$   
 but  $PbO_2 + 2 (K_2 Fe Cy_3) + Aq = K_3 Fe_2 Cy_6 + KO + PbO + Aq$ —  
*i. e.*, deutoxide of lead in contact with ferro-cyanide of potassium forms ferrid-cyanide of potassium, hydrated oxide, and some carbonate of lead with free or carbonate of potassa in solution, the carbonic acid being taken up from the atmosphere.

At the same time it may be remarked, that this latter reaction forms the very best means of preparing a pure red cyanuret of potassium and iron on a small scale.

Yours, most obedient,

FERD. FEIST MAYER.

Philadelphia, August, 1856.

## A FEW HINTS RELATIVE TO THE COLLECTION OF SOME INDIGENOUS DRUGS.

By THE EDITOR.

It is a matter of some importance to the thorough pharmacist to keep in mind the proper time of gathering plants and barks, roots, leaves and other parts of plants, in reference to laying up a store for future use and for the manufacture of quantities of preparations requiring them to be used at the period of their greatest medicinal power.

*Wild Cherry Bark.*—According to the results of Mr. Perot, (see vol. xxiv. page 109, of this Journal,) the proper period of col-

lecting wild cherry bark is in the fall, September or October, as then it contains a larger proportion of amygdalin, and consequently yields more hydrocyanic acid and volatile oil than in the spring or summer.

*American Senna*.—According to the late Dr. R. E. Griffith, (Medical Botany, p. 261,) American senna leaves should be collected when the fruit is ripe or nearly ripe, which is in September.

*Dandelion Root*.—Roots generally, as is well known to many, should be collected in the fall months, and before frost sets in. This is especially true of taraxacum, which in October has its juices well stored with the bitter principle, the presence of which is usually considered an index of medicinal power, although we believe physicians have yet to prove on what constituent of the plant that power depends.

*Pith of Sassafras*.—An experienced collector of medicinal plants informs us, that pith of sassafras should not be collected until *after* the 15th of October, as when removed before that time it frequently assumes a brown hue, probably from the presence of juices subsequently removed by absorption, as the period of suspended vegetation approaches.

*Diospyros—Unripe Persimmons*.—Formerly the bark of the persimmon tree was the part made officinal, but in the Pharmacopœia of 1850, the unripe fruit was substituted, which is now the proper officinal substance to be dispensed under the name “Diospyros.” The fruit should be collected when it has attained its full size, and on the point of changing color, but before the conversion of tannin into sugar has commenced, a change rapidly promoted by frost. In September is the time for the collection of this fruit. When not used fresh, it should be sliced and dried in a warm situation with free circulation of air.

*Dulcamara*.—The terminal twigs of bitter sweet should be collected in October, or after the fall of the leaves, and, for convenience of division by the mill or pestle, should be cut in short transverse slices, not over half an inch in length; a treatment which also favors their dessication.

*Ulmus*.—Slippery elm bark, as found in the market, varies much in appearance and quality; sometimes its color is uniform throughout, fibrous, and full of mucilage, with but little astringency. At other times its fibrous character is wanting, and the

bark breaks transversely without difficulty, is much less mucilaginous, and consists chiefly of cellular structure. Again, it is met with much discolored and with portions of the outer bark adhering. Now it is highly probable that the season of collection has a marked influence on the structure and medicinal value of the bark; yet we *know* so little, positively, of the times and circumstances of collecting the varieties of commerce, that it would be, perhaps, presumption to hazard an opinion, and therefore suggest that some pharmacist, who has the opportunity by location, will investigate the influence of season on the character of the inner bark of *Ulmus Fulva*.

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#### ON LIQUIDAMBAR STYRACIFLUA.

By CHARLES W. WRIGHT, M. D.,

Professor of Chemistry in the Kentucky School of Medicine.

Liquidambar *Styraciflua*, commonly called *sweet-gum*, is indigenous to nearly every part of the United States, and constitutes one of our largest forest trees. When an incision is made through the bark of this tree, a resinous juice exudes, which possesses an agreeable balsamic odor. When this substance first exudes, it is of the consistence of turpentine, and possesses a stronger smell in that condition than it does after it has become resinified. Contrary to the statements made by Wood and Bache, in their *Dispensatory*, this tree furnishes a considerable quantity of resin in the Middle States, particularly in the States of Ohio, Indiana, and Kentucky, bordering on the Ohio River. It is annually collected in those States, and sold under the name of *gum-wax*. It is a much more agreeable masticatory than the spruce-gum, and is chewed in the West by nearly all classes. By proper incisions, one tree will yield annually about three pounds of the resin.

The chemical composition of the specimens collected in this latitude correspond with that given by M. Bonastre, of specimens gathered elsewhere, viz: benzoic acid, a volatile oil, a semi-concrete substance separated by distillation and ether, an oleo-resin, a principle insoluble in water and cold alcohol, termed *styracine*. The bark of the tree contains tannic and gallic acids, to which its astringency is due.

What I wish more particularly to call attention to is the employment of a syrup of the bark of this tree, in diarrhœa and dysentery, and more especially the diarrhœa which is so prevalent among children during the summer months in the Middle States, and which frequently terminates in cholera infantum.

The best formula for the preparation of this syrup is that given in the *United States Pharmacopœia*, for the preparation of the syrup of wild-cherry bark, of which the following is a copy, the sweet-gum bark being substituted for the wild-cherry bark.

“Take of sweet-gum bark, in coarse powder, *five ounces*; sugar (refined) *two pounds*; water *a sufficient quantity*. Moisten the bark thoroughly with water, let it stand for twenty-four hours in a close vessel, then transfer it to a percolator, and pour water upon it gradually until a pint of filtered liquor is obtained. To this add the sugar in a bottle, and agitate occasionally until it is dissolved.”

The dose of this syrup for an adult is about one fluidounce, to be given at every operation, as long as the operations continue to recur too frequently.

One advantage which this medicine possesses over most astringent preparations is that of having an exceedingly pleasant taste, and of being retained by an irritable stomach when almost every other substance is rejected. Children never object to it on the score of bad taste. The resinous and volatile bodies which it contains, no doubt enhances its value. My brother, Dr. J. F. Wright, of Columbus, Indiana, has employed this preparation for the past three years in a great number of cases, with the most satisfactory results. He prefers it to any other article where there is an indication for astringent medication in the class of diseases before referred to. In the bowel complaints of children it has a decided advantage over all preparations containing opium, and I am always pleased with the happy results which follow its employment in that class of patients.—*American Journal of the Medical Sciences*, July, 1856.



## ON PROTOSULPHATE OF NICKEL.

By C. MARIGNAC.

According to Marignac, the protosulphate of nickel in quadratic crystals, to which the same amount of water has hitherto been ascribed as to the rhombic salt  $\text{NiO}, \text{SO}^3 + 7\text{H}_2\text{O}$ , only contains 6 equivs. of water. From a solution of pure protosulphate of nickel he obtained, at  $59^\circ$  to  $68^\circ$  F., the rhombic crystals, isomorphous with sulphate of zinc and sulphate of magnesia; at  $86^\circ$  to  $104^\circ$  F. quadratic, and at  $122^\circ$  to  $158^\circ$  F. monoclinometric crystals. These crystals showed the following composition:

| Rhombic crystals.         |             |        |       | Quadratic crystals. |             |        |       |
|---------------------------|-------------|--------|-------|---------------------|-------------|--------|-------|
|                           | Calculated. | Found. |       |                     | Calculated. | Found. |       |
| NiO                       | 26.71       | ..     | 26.38 | NiO                 | 28.53       | 28.32  |       |
| SO <sup>3</sup>           | 28.46       | ..     | 28.47 | SO <sup>3</sup>     | 30.41       | 30.42  |       |
| 7H <sub>2</sub> O         | 44.83       | 44.62  | 45.15 | 6H <sub>2</sub> O   | 41.06       | 41.26  | 41.59 |
| Monoclinometric crystals. |             |        |       |                     |             |        |       |
|                           | Calculated. | Found. |       |                     |             |        |       |
| NiO                       | 28.53       | 27.79  |       |                     |             |        |       |
| SO <sup>3</sup>           | 30.41       | 29.82  |       |                     |             |        |       |
| 6H <sub>2</sub> O         | 41.06       | 42.39  | 41.55 | 41.58               | 41.08       |        |       |

Marignac remarks that even Mitscherlich found 30.14 and 29.88 per cent. of sulphuric acid in the quadratic salt. When the rhombic crystals are converted by exposure to the light of the sun into aggregations of quadratic crystals, a loss of water takes place, which Marignac determines at 6.87 per cent.; the conversion of  $\text{NiO}, \text{SO}^3 + 7\text{H}_2\text{O}$  into  $\text{NiO}, \text{SO}^3 + 6\text{H}_2\text{O}$ , requires a loss of weight of 6.40 per cent. The monoclinometric crystals remain transparent above  $104^\circ$  F.; at ordinary temperatures they gradually become opaque without loss of weight, and are probably converted into aggregations of quadratic crystals.

Dimorphism was therefore ascertained to occur in  $\text{NiO}, \text{SO}^3 + 6\text{H}_2\text{O}$ , but not in  $\text{NiO}, \text{SO}^3 + 7\text{H}_2\text{O}$ .

From solutions of sulphate of magnesia at about  $158^\circ$  F., of sulphate of zinc at  $122^\circ$  to  $131^\circ$  F., and of protosulphate of cobalt at  $104^\circ$  to  $122^\circ$  F., the author obtained crystals of the composition  $\text{RO}, \text{SO}^3 + 6\text{H}_2\text{O}$ , isomorphous with the monoclinometric protosulphate of nickel,  $\text{NiO}, \text{SO}^3 + 6\text{H}_2\text{O}$ .—*Chem. Gaz.* July 1, 1856, from Liebig's *Annalen*, March, 1856.

## A MANUFACTORY OF ULTRAMARINE AT NUREMBERG.

The manufactory belonging to Messrs. Zeltner & Heyne has acquired a European reputation, and sends its produce to all parts of the globe. Its exterior aspect is somewhat imposing, the whole being surrounded by a wall, and one of the buildings looks rather like a fortress, the entire space occupying an area of seven Bavarian acres (*Morgen*). The central building consists of a polygon of twenty-four sides, with ninety-six furnaces, arranged in twelve compartments with as many high chimneys. Thence issue twelve branches of rails to all parts of the manufactory, being provided at the intersecting points with turning platforms. From the upper stories similar rails of wood are laid; the iron rails being 4500 feet long, the wooden ones a trifle less. If we enter the polygon, which has a diameter of 136 feet, and is surrounded by buildings 300 feet long, and two stories high,—the dim of twilight gives the idea of being in the pit of a mine. All these buildings are vaulted and bomb-proof. The departments of this manufactory are manifold. In the middle is a building for mechanical contrivances, with two steam engines; to the east the above polygon; towards the west a high-pressure engine, with a mill and a washing apparatus. The mills have twenty-eight troughs, and are mostly of cast iron; of the two stores one is 300 feet long, and this alone can hold 3000 to 4000 cwts. of ultramarine. A swinging rail transfers the colors from one end of the building to the other. Covered passages connect the single buildings, and there are seven large roads and six courts, presenting everywhere a fine perspective. Towards the west is a long row of drying-houses, in which a constant tropical heat is to be maintained, so that winter loses it power in all the vicinity. The merit of the discovery of artificial ultramarine belongs to Professor Gmelin, who died in scanty circumstances. This manufactory arose in 1839, and the proprietors preserve yet the weather-boarded shed in which they began business. The manufactory employs 200 workmen, of whom 180 are married. They have established a sick fund, and a pension fund for widows, orphans, and invalids, as well as a singing chorus. The best blue artificial ultramarine has to pass eighty different processes until it is ready for use, and is now applied to the coloring of cotton and wool-stuffs, tapestry, paper, sealing-wax, &c., besides its purely artistic use.—*Jour. Frank. Inst., from London Builder.*

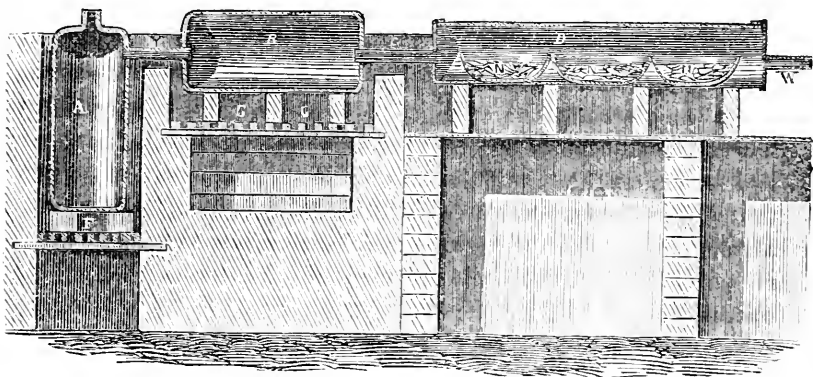
## PREPARATION OF ALUMINIUM, SODIUM, CHLORIDE OF ALUMINIUM, ETC.

Mr. Deville has just published a detailed account of the experiments with which he has been engaged for some time, with reference to the production of aluminium, in such a state, and at such a cost, as to be practically applicable for various purposes in the arts.

The method that he adopted is essentially the same as that by which Mr. Wöhler obtained this metal—the decomposition of chloride of aluminium by means of an alkaline metal. Sodium was chosen as the decomposing agent, because it is more easily obtained than potassium.

The apparatus used is represented by fig. 1. It consists of three cylinders A, B, D, connected by tubes Y, C, and heated by furnaces F, G.

Fig. 1.



The chloride of aluminium is introduced into the cylinder A; the sodium is placed in trays, holding about ten pounds each, within the cast iron cylinder D. The intermediate cylinder, B, contains about a hundred weight of scrap iron, which serves to separate iron from the vapor of chloride of aluminium, by converting the perchloride of iron into the much less volatile protochloride; it also separates hydrochloric acid and chloride of sulphur.

While the operation is in progress, the tube C is kept at a temperature of  $400^{\circ}$  to  $572^{\circ}$  F., and the cylinder D is heated so as to be barely red at the under surface; the reaction between the chloride of aluminium and sodium is attended with so great an evolution of heat that it is sometimes necessary to remove the fire entirely.

Very soon after the reaction has commenced, the chloride of sodium combines with the excess of chloride of aluminium, forming a double salt, which is sufficiently volatile to be carried to the adjoining tray, where the aluminium is eliminated by means of the sodium. The reaction does not commence in one tray, until it has ceased in that which precedes it, and it is at an end when on removing the cover (W) of the cylinder, the last tray is found to contain, in the place of the sodium, a black mass, covered with a colorless liquid which is the double chloride of aluminium and sodium. The trays are then withdrawn, and replaced by a fresh charge of sodium.

When the contents of the trays are cold they are transferred to crucibles of cast iron or clay, and heated until completely melted, and the double chloride begins to volatilize. Most frequently the reaction between chloride of aluminium and the sodium is not completed in the cylinder, the sodium being protected by a crust of chloride of sodium; but a double chloride of aluminium and sodium at the top of the trays is always sufficient to ensure the perfect absorption of the sodium in the crucible, and the aluminium remains finally in contact with a large excess of chloride of aluminium, which is indispensable for the success of the operation.

When the crucibles are cold, the layer of chloride of sodium is removed from the top, and from the lower part the globules of metal are separated by washing with water; but, unfortunately, the chloride of aluminium is dissolved, and exercises a very destructive action upon the metal, so that the globules obtained are not larger than a pin's head. These are collected, dried, put into a crucible, melted, and run into an ingot.

It is necessary to take especial care in removing from the sodium every particle of carbon which is sometimes mixed with it when badly prepared or insufficiently purified, for otherwise considerable quantities of metallic cyanides or cyanates are formed,

which disengage ammonia when brought in contact with water, and cause a further destruction of aluminium. It is also necessary to avoid melting the aluminium while it contains sodium, in which case it takes fire. It is always better to melt it together with some of the double chloride of aluminium and sodium.

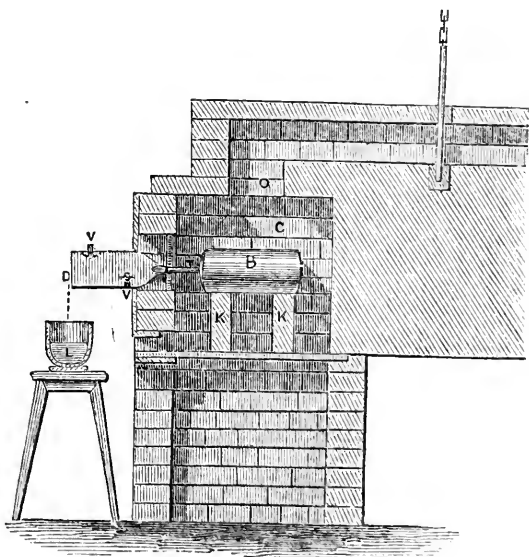
The sodium was obtained by heating a mixture of carbonate of soda and carbon in an iron vessel. In operating upon the large scale coal is used, and the proportions of the materials that furnished the best result were—

|                         |   |   |   |   |    |
|-------------------------|---|---|---|---|----|
| Carbonate of soda (dry) | . | . | . | . | 30 |
| Coal                    | . | . | . | . | 13 |
| Chalk                   | . | . | . | . | 5  |

The characters requisite in this mixture are that it should not melt at the temperature at which sodium is liberated, and that it should acquire a pasty consistence so as to remain in contact with the sides of the vessel in which it is heated. The high latent heat of carbonic oxide and of gaseous sodium prevents the iron vessel from being melted.

Fig. 2.

These substances are dried, powdered, and sifted; then mixed and sifted again, so as to be intimately mixed. The mixture should then be calcined. By this means its volume is considerably reduced, and when the calcination can be effected by the waste heat of a furnace, considerable advantage is gained.

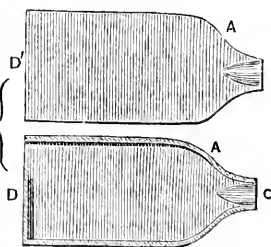


The apparatus used for the preparation of sodium is represented by fig. 2. The fireplace, CC, of the furnace, shown in action, is lined with firebricks; the bars, G, are moveable, and the flue should be furnished with a well fitting damper. In the breast of the furnace there is a square opening, P, closed by a plate of cast iron, with a hole through which the tube, T, may project.

A mercury bottle, furnished with an iron tube about three inches long, serves as the distillate or vessel. It is supported upon two firebricks, K, about four inches high, and hollowed at the top so as to fit the side of the bottle.

Fig. 3.

The receiver (fig. 3) in which the sodium is condensed is made of two pieces of sheet iron about one tenth of an inch thick, AA. One of these pieces is flat, except at the end, C, where it is hammered so as to form a semi-cylindrical hollow. The other piece is turned up at the sides so that, when fitted to the plate, A, there is a space of about one



fifth of an inch wide and a hollow, corresponding to that in the other plate, is hammered at the end, so that together they will form a collar to receive the conical end of the tube T. The edges are filed, so as to fit close, and are kept in their place by two binding screws (VV, fig. 2.)

When the bottle containing the mixture is placed in the furnace, and the fire made up, a copious evolution of gas commences; and, after about half an hour, a white vapor of carbonate of soda is deposited, which would seem to indicate that the gas contained sodium. However, the receiver must not be attached to the bottle until a cold iron rod passed into the tube, T, is found to be covered with sodium. When the draught of the furnace is good, the sodium is disengaged rapidly, and the receiver becomes so hot that the condensed metal flows out of the open extremity, D, where it is received in an iron basin, L, containing coal tar naphtha. If, after a time, the receiver should become stopped up, it is replaced by another, previously heated to about 400° or 500° F.

When this operation is well conducted, the sodium obtained is quite pure, and is not accompanied by those carbonaceous substances that are so troublesome in the preparation of potassium.

The operation should be conducted so rapidly that a charge of five pounds of the mixture may be worked off within about two hours.

The temperature requisite for the reduction of carbonate of soda by means of carbon is not so high as has hitherto been supposed; and, according to the opinion of Mr. Rivot, is not greater than that of the retorts in the centre of the zinc furnaces at the Vieille-Montagne.

From the ease with which the operation is conducted, it might be supposed that by increasing the dimensions of all parts of the apparatus used, much larger quantities of sodium may be obtained. However, Mr. Deville has found that there are practical objections to this course; and, after many unsuccessful attempts to work large receivers, he has found that it is preferable to use, with a reduction apparatus five times as large as the mercury bottle, receivers of the same dimensions as in that case.

In operating with large reduction vessels, the calcination of the mixture becomes more advantageous, if not indispensable. When the operation is made continuous, the mixture may be calcined as it is required, and introduced into the reduction vessel red hot.

The vessels used for the continuous operation are drawn iron tubes, four feet long, six inches internal diameter, and about  $\frac{1}{2}$  inch thick. One end is closed by a  $\frac{3}{4}$  inch plate of iron, with a hole near one side, into which is screwed the discharge tube that fits into the receiver. The other end of the cylinder is closed by a moveable iron plug, *O*, with a handle; it is at this end that the mixture is introduced.

These tubes must be covered with a refractory lute, and an exterior envelope of baked clay, so as to be entirely protected from the direct action of the fire.

The furnace in which the operation was conducted was an ordinary reverberatory furnace, in which the fireplace was divided into two parts by a small wall upon which the cylinders rested in the middle, while their ends were level with the outer walls of the furnace. The fuel was introduced through two lateral openings

kept closed by the fuel upon a shelf outside the furnace. These openings are at such a height above the bars of the furnace, that there would be a space of a foot between the fuel and the tubes. The fuel used was a mixture of equal parts coke and coal.

Upon the hearth of the furnace, the mixture for the preparation of sodium may be calcined in crucibles: and, when the furnace is worked continuously, the temperature becomes sufficiently high for working some reduction cylinders upon the hearth.

Mr. Deville did not find the furnace which he used very well adapted for the production of potassium, and considers that it would be better if constructed after the manner of a puddling furnace described by M. Dumas. He is of opinion that there is no question as to the practicability of the production of sodium by a continuous operation, if the furnace is constructed in a suitable manner.

The chloride of aluminium was prepared by the method recommended by Gay Lussac and Thenard. Alumina, quite free from iron, was mixed with 40 per cent. carbon, and a small quantity of coal, made into a paste, and decomposed at a red heat. The compact mass was broken into fragments, and introduced into an earthen retort. This was placed in a furnace, and heated in redness, while a stream of dry chlorine was passed through the contents. At first a considerable amount of water was evolved from the aluminous carbon, which is very hygroscopic. When the chloride of aluminium began to appear, an earthen funnel was fitted to the neck of the retort by means of asbestos and clay, and a bell-shaped vessel fitted in the same manner to the rim of the funnel. The chloride of aluminium condenses in this receiver, and, however rapid the stream of chlorine may be during the chief part of the operation, it is so completely absorbed by the aluminous carbon that the carbonic oxide which escapes does not give any indication of chlorine. However, it contains a little chloride of silicium, arising from the action of the chlorine and carbon upon the material of the retort; also, some aluminium, and, perhaps, some chlorocarbonic acid. When the receiver is full of chloride of aluminium, it is removed, and replaced by another, and so on till the operation is finished.

The amount of chloride of aluminium obtained from 10 pounds of alumina was rather more than 20 pounds. The carbonaceous



residue in the retort contained some alumina, a considerable amount of alkaline chlorides, and of the double chloride of aluminium and potassium. The residue was washed, mixed with a fresh quantity of alumina, and subjected to the same treatment.

In working the process upon a large scale, pitch was used as the carbonaceous substance; instead of the clay retort, an ordinary gas retort, and, instead of the bell vessel, a small brick chamber, covered with glazed earthenware.

The ammoniacal alum is calcined upon the hearth of the reverberatory furnace, in which the sodium is prepared. After having been heated to redness, it is powdered and mixed with coal tar. The paste is introduced into crucibles carefully covered, and placed in the reverberatory furnace. When the evolution of vapor ceases, the crucibles are removed, and, when it is possible, the aluminous carbon is used while hot.

The stream of chlorine should be so adjusted as to avoid loss either by escaping from the joints of the apparatus or by being carried up the chimney.

Before commencing the operation, every part of the apparatus should be rendered perfectly dry by heating it.

With regard to the utilization of aluminium in the arts, Mr. Deville considers that the necessary condition is its production at a cost considerably less than that of silver. Owing to the difference in density, if aluminium and silver were of the same value, aluminium would be only one-fourth as dear as an equal volume of silver; and, for equal masses, the rigidity of aluminium is much greater than that of silver.

The materials with which aluminium is produced, even by the methods hitherto employed, are all obtainable at a small cost. Thus, to produce about half a hundred-weight of aluminium, there would be required

|                   |                     |     |         |
|-------------------|---------------------|-----|---------|
| Chlorine          | 237 pounds, costing | . . | £2 14 0 |
| Alumina           | 114    "        "   | . . | 0 13 0  |
| Carbonate of Soda | 350    "        "   | . . | 2 13 0  |
| <hr/>             |                     |     |         |
|                   |                     |     | £5 0 0  |

Which would render the cost of the materials for producing a pound of aluminium about two shillings.

With regard to the actual cost of the production of aluminium

in these experiments, Mr. Deville states that he is unable to speak decisively; and that the means of working at his disposal were so defective that the experiments made could not furnish an exact indication with regard to this particular.

However, he states that he was able to produce sodium at a cost of three shillings and sixpence per pound, including only the cost of materials, labor, fuel, and retorts. The quantity of sodium made by Mr. Deville at the Javel Works was from 330 to 440 pounds.

The cost of the chloride of aluminium was about one-and-sixpence a pound. Alumina was prepared from ammoniacal alum, and cost as much as two shillings a pound. The quantity of chloride of aluminium made was from 1100 to 1320 pounds.

*London Pharm. Journ. July, 1856, from Annal. de Chem.*

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#### REPORT ON THE HISTORY OF THE MANUFACTURE OF ARTIFICIAL SODA.

(From correspondence of M. Jerome Nickles, Paris 1856.)

The question of priority as to the process of manufacturing artificial soda has just been the subject of thorough investigation by the Academy of Sciences. This work was called forth by the Minister of Public Instruction at the request of the children of Leblanc, author of the process which bears his name. Another claim, that of the children of Dizé, collaborator of Leblanc, being presented at the same time, the Section of Chemistry in the Academy of Sciences was obliged to proceed to a historical and bibliographical research which has resulted in a complete elucidation by M. Dumas of this important point in the history of Science.

The discovery of the process which derives soda from marine salt was made by Leblanc, who was also the first to give it a trial. It was not till afterward that he associated himself with Dizé, then chemical assistant at the College of France.

Nicholas Leblanc was born in 1743. Toward 1780 he was attached as surgeon to the household of the Duke of Orleans. He commenced in 1785 his communications upon crystallization which gave him a distinguished rank among the chemists of the time. His first researches upon methods of obtaining soda, economically, date from 1784. This problem had already been

broached, and different processes had been proposed for making soda from marine salt either by means of lime, or by means of the oxyd of lead, but without industrial results.

In 1777, Father Malherbe, a Benedictine, pointed out a process of converting marine salt first into sulphate of soda which he afterwards decomposed by means of charcoal and iron; a process which has quite lately been put in practice by Mr. E. Kopp, as has been already mentioned in this Journal.\*

In 1789, De la Métherie proposed to convert marine salt into sulphate of soda, and to reduce this sulphate by carbon. This reduction would only have given sulphuret of sodium. Leblanc was aware of this, and according to Dizé, trials were made by himself and Leblanc to decompose this sulphuret by means of carbonic acid. This process, taken up by Pelletan in 1827, became the basis for establishing a manufactory in Paris; but the enterprise was not successful, and up to this time the method is not employed.

These processes were brought forward in consequence of competition for a prize offered by the old Academy of Sciences to the best work on the fabrication of soda from marine salt. The object was to protect the arts of bleaching, glass-making and soap-making against the evil effects of a rise in the price of pearlashes produced by the Revolutionary War in the United States, and also a rise in the native sodas of Spain, and the scarcity of beds of native natron. The prize was not awarded. The production of artificial soda, like so many other inventions, was to be accomplished only after obstinate trials, the theory of which was not to precede the results. It was not foreseen that in calcining the sulphate of soda with chalk and charcoal, an insoluble oxysulphuret would be obtained containing all the sulphur, and capable of yielding to water all the carbonate of soda contained in the product.

This is the discovery of Leblanc. It belongs entirely to him as M. Dumas has established by means of written documents of incontestable authenticity, from which it appears that on the 12th February, 1790, there was formed before a notary a company for carrying out the invention, a company composed of M. Leblanc, Dizé, and as loaner\* of the funds, the Duke of Orleans.

\* Corr. of J. Nickles, Nov. 1, 1855.

To the fabrication of artificial soda, the making of sal ammoniac, and of white lead were added, processes of which Dizé was the author.

The Company was established at St. Denis near Paris, in a factory called *Franciade*, and the manufacture commenced but without much success. The events of the Revolution soon caused the sequestration of the property of the Duke of Orleans and consequently that of the soda factory in which he was the capitalist.

At the same time, upon the proposition of a member of the national convention, Citizen Carny, possessor of a process for the extraction of soda, an appeal was made to all Frenchmen to make within three months a surrender of their private interests, and to deposit upon the altar of their country the processes which would allow the manufacture of soda from a product drawn from French soil and which would thus relieve the country from the tax paid abroad.

Twelve processes were sent to the Committee of Public Safety, that of Leblanc among them. It was recognized as the best, and the Convention ordered the publication of his *brevet d'invention*, taken in 1791, but acknowledging his rights to a fair indemnity which the misfortunes of the time did not allow to be paid. The hour of reparation has at last arrived. The section of Chemistry in the Academy has decided as follows :

“ 1. The important discovery of the process by which soda is extracted from marine salt belongs wholly to Leblanc.

“ 2. Dizé made researches in common with Leblanc only for the purpose of determining the best proportions of the materials to be employed in the manufacture of soda, and for establishing the factory at St. Denis.

“ 3. If then it is proposed to render just homage to the author of the discovery, it is due to the memory of Leblanc, and to his family should the testimonial be addressed.”

Leblanc was the type of the inventor ; full of self denial, perseverance, confidence. His correspondence shows that he left no step untried, that might secure the success of his work. His savings, the fruit of labors undertaken from day to day, were all consecrated to this grand object ; and when reduced to extremities, he exhausted every resource.

At several times the Government sent him money, to encourage his researches, and on the 19 Fructidor an II. (1793) he obtained 4000 livres from the Committee of Public Safety to meet the advances he had made in reference to the project of which he was the inventor. Leblanc was a man both of imagination and knowledge. The most distinguished men of his times professed for him a warm sympathy. He took part in all those liberal associations where friends of science resorted. The government charged him with various scientific missions. He published various researches upon nickel, alum, sulphate of magnesia, the production and extraction of saltpetre, the chemical preparation of manures, &c., but he never realized the dream of his life. In despair, he destroyed himself on the 15th of January, 1806. He left two sons, one of whom, a professor in the Conservatoire of Arts and Trades, has acquired a high reputation in the industrial world by his publications and the progress which he has made in the invention of machines.—*American Journal of Science and Arts*.

## ON THE COMPOSITION OF THE WATER OF THE DELAWARE RIVER.

By HENRY WURTZ, New Jersey State Chemist, etc.

The water of the Delaware which was submitted to analysis, was collected from the river on the 11th day of September last, at a spot opposite the pump-house of the Water Works, and immediately over the grating through which the water is drawn to supply the reservoir. A specimen was also obtained upon the same day, of the water in the reservoir, for the purpose of comparing the proportion of foreign ingredients in the reservoir water, with that in the river water. The spring water analysed was obtained some days later, from one of the tanks from which the city was formerly supplied, in the rear of the residence of Mr. Closson.

The proportion of solid matter found in the several waters was as follows :

|                                                 | Grains. |
|-------------------------------------------------|---------|
| In one gallon of Delaware water, . . . . .      | 3.5346  |
| In one gallon of the reservoir water, . . . . . | 3.8555  |
| In one gallon of the spring water, . . . . .    | 3.6077  |

For convenience of comparison, I will here quote the results of Professor B. Silliman, Jr., obtained some years ago with the Croton and Schuylkill waters.

Solid matter found by Prof. Silliman :

|                                              |                  |
|----------------------------------------------|------------------|
| In one gallon of Croton water, . . . . .     | Grains.<br>10.93 |
| In one gallon of Schuylkill water, . . . . . | 5.50             |

The most remarkable thing about these results is that notwithstanding the quantity of sand, mud, and other sediment which is suspended in the river water, so much as to injure the pumps, and which must be in great measure deposited and separated from the water in the reservoir, the latter, nevertheless, actually contains more solid matter than the river water itself. This can only be accounted for by the favorable conditions presented in the reservoir for the growth of minute animals and plants, whose remains add of course to the weight of the solid residue obtained on evaporation. My pupil, Mr. Howland Bill, has at my request submitted the water in the reservoir, and the deposit formed at the bottom, to a microscopic examination, and reports to me that he finds in the water several varieties of animalcules and lichens or minute plants, and that the sediment especially is almost wholly composed of forests of minute plants through which roam herds of such animals as *Volvox globator*, or "globejelly," *Vibrio anser*, or "goose animalcule," and several species of *Bacillaria* and *Navicula*. On the surface of the water he found a slight green scum, which when magnified resolved itself into collections of the *Cercaria mutabilis*, an animal production characteristic of stagnant water. Numerous large green water weeds may also be seen floating in the reservoir.

Recurring to the results given above, it may also be remarked that the river water is really somewhat less charged with foreign ingredients than that of the springs, although the latter is so much more pleasant to persons possessing delicate organs of taste. This probably arises from the fact that the principal mineral ingredient in spring water, as shown by analysis, is *chlorid of sodium* or common salt, while the river water is principally contaminated with carbonates of lime, magnesia, potash, etc., which give water a bitter taste.

The analysis will be found below in a complete form and ar-

ranged so as to admit of a comparison between the composition of the river and the springs.

|                                                         | RIVER.<br>Grains in one gallon of 58.372<br>grains. | SPRINGS. |
|---------------------------------------------------------|-----------------------------------------------------|----------|
| Whole solid matter found, . . . .                       | 3.534581                                            | 3.607750 |
| Carbonate of lime, . . . .                              | 1.300000                                            | —        |
| Carbonate of magnesia, . . . .                          | .889972                                             | —        |
| Carbonate of potash, . . . .                            | .172471                                             | —        |
| Chlorid of sodium, . . . .                              | .106834                                             | 1.021225 |
| Chlorid of potassium, . . . .                           | .012190                                             | —        |
| Sulphate of lime, . . . .                               | .185847                                             | .009233  |
| Phosphate of lime, . . . .                              | .142338                                             | .144659  |
| Silica, . . . .                                         | .497587                                             | .755894  |
| Sesquioxyd of iron, with trace of Alumina, . . . .      | .027453                                             | .126778  |
| In combination with the silica<br>and organic matter, { | Lime, ———                                           | .277662  |
|                                                         | Magnesia, ———                                       | .355620  |
|                                                         | Potash, ———                                         | .493059  |
|                                                         | Soda, ———                                           | .173518  |
| Oxyd of manganese, . . . .                              | trace.                                              | —        |
| Carbonic acid, . . . .                                  | —                                                   | trace.   |
| Organic matter containing ammonia . . . .               | .634852                                             | .558342  |
| Specific gravity, . . . .                               | 1.00071                                             | .99972   |

The specific gravity of the Reservoir water was 1.00064.

On comparison of this analysis of the waters of the Delaware with other analyses of river waters, the fact is rendered apparent that few rivers exist whose waters are so free from impurity. All causes of complaint which have arisen are due to the improper mode of storing the water for use. Open reservoirs, in which the water is kept standing for several days to stagnate in the heat of the sun, are perfect hotbeds for the growth of animal and vegetable life. Finding every necessary requisite to their germination, light, heat, and an unlimited supply of fertilizing mineral substances, phosphates, sulphates, carbonates and silicates of lime, potash, ammonia, etc., infinite numbers of minute seeds spring forth into growing plants, which in their turn furnish nourishment to innumerable swarms of living animals engendered from their embryos preëxistent in the water. The breeding of these microscopic creatures, under favorable circumstances, is so rapid that in a very few hours the water will become alive with them.—*Ibid.*

## PURIFICATION OF WATER SUPPLIED TO TOWNS, ETC.

At a recent meeting of the Society of Arts, the method proposed by Dr. Clark for purifying water for the supply of towns was described by him, and its applicability for this purpose discussed.

The substances with which water is contaminated may be in two states—suspended and dissolved; both may contain mineral and organic substance.

Spring water contains from  $\frac{1}{20000}$  to  $\frac{1}{1000}$ , or even  $\frac{2}{1000}$ , dissolved substance, but no suspended substance. This is the case with many kinds of water in and around London; but, when collected at the surface in reservoirs, and exposed to light and air, vegetation commences, and is succeeded by the development of animalcules. After a time, both the plant and animal organisms pass into a state of putrefaction, and become a source of serious contamination.

The water of rivers generally contains less dissolved substance than that of the springs in the same district, and it also contains suspended substances of various kinds that are washed into the rivers from the banks by small streams, rivers, &c.

The separation of suspended substance is effected either by subsidence or by filtration.

The nature of the dissolved substance depends upon the kinds of strata traversed by the water; it generally consists, for the most part, calcareous salts—sometimes with magnesian salts—alkaline salts, ammoniacal salts, rarely, and in small amounts.

The calcareous and magnesian salts communicate to water the character of *hardness*. This character varies considerably in amount in different kinds of water, and is expressed in degrees, *each degree of hardness being as much hardness as a grain of chalk, or the lime, or the calcium, in a grain of chalk, would produce in a gallon of water, by whatever means it may be dissolved.*

The hardness of most of the water around London is owing to the presence of dissolved carbonate of lime. The amount is so large, that the average supply of water to a single family would yield in eight months 100 pounds of chalk, and in 100 gallons of water there is enough to destroy 35 ounces of soap.



Carbonate of lime itself is very sparingly soluble in water; probably 5000 gallons would be requisite to dissolve one pound avoirdupois. But when combined with an additional amount of carbonic acid, it forms bicarbonate of lime, which is so much more soluble in water, that one pound of carbonate with seven ounces additional of carbonic acid would dissolve in 400 gallons of water; and this is about the amount present in well-water from the chalk strata.

The carbonic acid may be separated from carbonate of lime by heating, as in the ordinary operation of lime-burning, and the lime thus obtained is still more soluble in water than the bicarbonate of lime; so that a pound of carbonate of lime, consisting of—

|               |   |   |   |   |   |           |
|---------------|---|---|---|---|---|-----------|
| Lime          | - | - | - | - | - | 9 ounces, |
| Carbonic Acid | - | - | - | - | - | 7 ounces, |

yields a quantity of lime that may be dissolved in 40 gallons of water.

Thus it appears that carbonate of lime, itself scarcely at all soluble in water, may be rendered soluble in two different ways—either by being deprived of its carbonic acid, or by combining with an additional quantity of carbonic acid.

It is by the latter of these two changes that water, in traversing chalk strata, becomes so highly impregnated with carbonate of lime; for carbonic acid is always substracted from the atmosphere by water during its condensation as rain, &c., and a further amount is frequently dissolved by the water in percolating the vegetable soil.

To separate this dissolved carbonate of lime, so far as may be practicable, is the object of Dr. Clark's method of purification. It is based upon the fact that when a solution of bicarbonate of lime, such as ordinary water, is mixed with a solution of lime, half the carbonic acid is abstracted from the bicarbonate, and both lime and bicarbonate of lime are converted into the very sparingly soluble carbonate.

When this operation is so managed that the lime added is just sufficient to form carbonate with the surplus carbonic acid in the bicarbonate, almost the whole of the dissolved carbonate will be removed from the water, and only so much will remain

dissolved as corresponds with the solubility of carbonate of lime.

|                                       |   |                          |   |                        |   |         |
|---------------------------------------|---|--------------------------|---|------------------------|---|---------|
| Bicarbonate of lime<br>in 400 gallons | { | Carbonate of lime 16 oz. | } | = 16 oz. carb. of lime | } | = 2 lbs |
| Lime in 40 gallons<br>of water.       |   | Carbonic acid . 7 oz.    |   |                        |   |         |
|                                       |   | . . . . . 9 oz.          |   |                        |   |         |

This residual carbonate of lime is always small in amount. Supposing in the above instance the 440 gallons contained  $17\frac{1}{2}$  oz. dissolved carbonate of lime,  $\frac{10}{11}$  or 16 oz. would be separated, and only  $1\frac{1}{2}$  oz. be left in solution. The water, before being softened, would destroy 35 oz. of soap for every 100 gallons; after being softened, the same quantity would destroy only 5 oz.

Most water contains, besides carbonate of lime, calcareous and magnesian sulphates, chlorides, &c. These substances communicate hardness to water, as well as carbonate of lime; but there is the difference—that the hardness owing to the presence of these substances is not removed by limeing. This, however, is not of any practical importance, so far as regards the purification of the water supply of London by this method; for the hardness of the water round London is chiefly owing to carbonate of lime.

Without perhaps being prejudicial to health, the disadvantages arising from the presence of carbonate of lime in water are numerous and considerable.

1. It is the principal cause of the incrustation of steam-engine boilers.

2. It causes a great, and at the same time useless increase in the consumption of soap, and is deposited in dirty linen in such a manner as to fix the dirt, and prevent its being rendered white.

3. For many culinary purposes it is less suitable than soft water.

Dr. Clark's method is remarkable, inasmuch as it differs from most chemical operations in not introducing any other substance into the water in place of the carbonate of lime separated; and, moreover, the separation is effected without the use of any substance foreign to the water in its natural state.

There is another effect produced by this method of purifying water, which does not appear to have been at first anticipated by Dr. Clark. It is the removal of organic substance.

In general the wholesomeness of water is much more affected by the presence of organic substance than by mineral substance; and it seems to be a fact well established by observation, that some of the poisons producing epidemic disease find a congenial habitat in water contaminated with organic substance. Moreover, when organic substance in water undergoes putrefaction, the sulphates always present in water are decomposed, and sulphuretted hydrogen generated. The deleterious character of the water of the Niger was ascribed by the late Professor Daniell to this circumstance.

The amount of organic substance in water may be very minute, but it must not on that account be regarded as insignificant. The amount of organic substance in the most defective kinds of water supplied in London, is very small in proportion to the mineral substance; but it is generally considered by recognized authorities, that, under certain conditions, this organic substance may acquire such a state as to produce disease in those drinking it habitually. In this respect the cause of disease existing in water is analogous to that known as sausage-poison, and that producing the frequent fatal effects of a cut with a dissecting knife, neither of which appear to be chemically tangible.

Investigations relating to the last epidemic of cholera have shown that in one district in London, containing a population of 500,000, which were chiefly supplied with water by two different companies, there were over 4000 deaths from cholera during the epidemic. The only recognizable difference in the conditions and modes of the inhabitants, was, that one portion were supplied with water of good quality, drawn from a point high up the Thames; while the other portion were supplied with water drawn from a lower point of the river, where it was profusely contaminated with town-drainage. It proved upon inquiry that the mortality among the former portion was 37 in 10,000, while among the other portion it was 130 in 10,000, or three-and-a-half times as great as in those houses supplied with the better water. Further inquiry showed that in the epidemic of 1848-49 the mortality was uniform throughout the district. There was no such difference between the houses supplied with water by the two companies, the mortality being in one case 118 and in the other 125; but at that period both companies drew their

water from nearly the same part of the Thames, low down, where it was contaminated with town-drainage.

The method of purification proposed by Dr. Clark not only effects the separation of carbonate of lime, which as regards the wholesomeness of water is of secondary importance, but it also separates organic substance. At the print works, in Manchester, it is applied specially for this purpose, and in an experiment made upon 3,000,000 gallons at the Chelsea Water Works it is stated by Dr. Miller that the amount of organic substance was reduced to one-third.

Some doubt was expressed by speakers who took part in the discussion, as to whether the organic substance removed by liming was that suspended or that in solution. Both are in fact removed, but it does not appear that there are any grounds for regarding the one more prejudicial to health than the other.

The removal from water of the carbonate of lime dissolved by carbonic acid, has also, indirectly, an influence upon the contamination with organic substance, by serving as a preventive of vegetation, and of the consequent development of animal organism.

When chalk spring water is pumped up from a well and exposed to light and air, in a clean glass vessel, capable of holding a few gallons, with a glass covering, and so exposed that the changes can be observed as they take place from day to day, it will be seen that all around the sides and bottom a green vegetation will appear in summer time within a few days. In process of time this vegetation tends to a brown, and if a close observation be made, a slight incrustation may be discovered, partly to float on the surface of the water, and partly to adhere to the sides and bottom of the vessel. This incrustation consists of carbonate of lime, slowly precipitated from the water by the separation of the duplicate dose of carbonic acid that kept the carbonate of lime dissolved. It is this carbonic acid that serves as the food of plants, furnishing carbon to them, and the carbonate of lime that was kept in solution by it forms the mineral part of the incrustation. If the glass vessel, after having been exposed as described for several weeks, be emptied, a dirty brownish incrustation, including vegetable substance, may be very well seen, all down the sides, and on the bottom. This

brownish incrustation has a strong, offensive, marshy smell. If side by side with the spring water there be exposed, in a similar glass vessel, the same water, previously softened, the softened water will continue for weeks and months unaltered, while that unsoftened water is becoming more and more contaminated by vegetation.

So long back as 1851, the commissioners appointed to report on the quality of the water supplied to London, remarked, that "it appeared to be only a question of time, when the sense of the violation of the river purity (by town drainage) would decide the public mind to the entire abandonment of the Thames as a source of supply, unless artificial means of purification were devised and applied." They also stated, "that a careful series of experiments left no doubt in their minds that the means of conducting this process are certain in their results, and sufficiently simple to be left to the execution of a workman of ordinary intelligence, that the process falls easily into the routine operations of water-works . . . is not attended with any peculiar difficulty on the large scale, and that the softening of Thames water in its ordinary condition by this process is perfectly practicable, at a cost which would, on the average, increase the price charged to the consumer only four per cent."

Nevertheless, there is only one instance in which this process has been applied to the purification of water supplied for general purposes. At the Plumstead Water-Works, near Woolwich, it has been in successful operation for the last year and a half. The water supplied by this Company is derived from the chalk by boring, and has about twenty degrees hardness, which is reduced to eight degrees by limeing. The works are capable of supplying 600,000 gallons daily, and at the present time about 3,000 houses are supplied.

Eight months after the Plumstead Water Company had been carrying on the softening process with success, and much to the satisfaction of the consumers, it occurred to the Company to try how far the consumers would continue to be satisfied with the water, if the softening process were omitted.

The consequence was that by the twelfth day the surface of the unsoftened water in the reservoirs, though daily renewed, was covered with masses of *conservæ* to such an extent, that

scarce a square inch could be found clear, and a powerful stench of decaying vegetable substance was evolved. Complaints of the water soon followed, and the experiment was discontinued.

In the course of the discussion Mr. Braithwaite put forward objections to the application of Dr. Clark's method of purification, on the ground that a certain amount of lime was necessary for maintaining the functions of animal life, and cited, in support of his argument, experiments made by Liebig, upon pigeons and cows. But, the quantity of lime supplied in solid food is much more than adequate to these requirements; in many districts, the water consumed by large populations, and by great numbers of cattle, is soft water, with a very small amount of lime in any state; and further, the lime salt, required for the formation of bone, is not carbonate, but phosphate of lime, which is never present in water to more than an infinitesimal amount. Moreover, the experiments cited by Mr. Braithwaite are quite inapplicable to the case in question, because, in those experiments, lime was entirely abstracted from the solid food, as well as from the water supplied to the animals. — *London Pharmaceutical Journal*, June, 1856.

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#### ON THE DISTILLED WATERS OF THE PHARMACOPŒIAS.

BY MR. HASELDEN.

The author stated that what he had to communicate was submitted to the meeting, not as comprising anything new, but in reply to the request which had been made that those practically engaged in the preparation of distilled waters would give the results of their experience on this subject. He adverted, first, to simple distilled water, which he thought ought to be more generally used in pharmaceutical operations than it was at present. It would, he said, be a desirable point gained if the colleges were to direct in future Pharmacopœias, that whenever water was ordered, either in preparations or in prescriptions, none other than distilled water should be used. This would obviate some difficulties which occasionally arise on account of differences in the appearance of medicines made from the same prescription, but dispensed at different houses. In order to keep up a cheap and sufficiently abundant supply of distilled water, an

arrangement should be adopted, wherever practicable, for having it condensed by a condenser, used for no other purpose, from a source of steam constantly in operation.

“I now turn to the other waters, which seem hitherto to have enjoyed the larger share of attention, and these for the sake of convenience, and not to occupy too much time, by considering each separately, I have arranged in three divisions, as my experience has led me to consider most appropriate. In the first division I have placed dill-seed, caraway, fennel, cinnamon, and pimento waters, in the preparation of which I am of opinion that the process of distillation is preferable to any other, as they are not likely to be contaminated with much mucilaginous matter, which might render them particularly liable to become sour; of these five, the fennel and pimento give the most trouble, the pimento continually depositing, for which I have found no better remedy than filtration; the fennel, if kept long, and there is not a large demand for it, becoming ropy, for which I believe a little spirit to be the best preventive.

“The excess of oil which generally passes over in distilling these waters, where the material acted upon is good, should be shaken well up with the water and transferred to the stock vessel, allowing it afterwards to separate, and when required, running it semi-opaque as it may be into the ordinary bottles in daily use; the oil being left in the stock vessel assists in preserving the water, and keeps it the full strength to the last. Occasionally remove the surplus oil when a fresh supply of water is put in, and the oil so collected will be found pure and fit for every purpose for which it may be required.

“In the second division I place peppermint, spearmint, and pennyroyal waters, and in preparing these I consider that trituration with magnesia or fine sand, always supposing that genuine oil is used, answers extremely well; but, as with the former, they should be kept in quantity, made some days before required for use, allowed to settle, and drawn off as wanted without being filtered. I can see no objection to the employment of magnesia, as ordered in the Pharmacopœia of 1836; the impression held by some that it absorbs the oil, and reduces the strength of the water, appears to me an erroneous one. Volatile oils are not given to saponification.

“In the third division I have rose and elder-flower waters, and with these I return to the plan of distillation, preferring the pickled to the fresh flowers, as I think the water from them is more permanent in odor and keeps better, being less mucilaginous and less apt to turn sour; these should also be kept in bulk, allowing the unsuspended attar, or volatile oil, to remain, and filtering as required. With the pickled flowers there is also the advantage of being able to draw any quantity as most convenient, according to consumption. The addition of spirit to rose and elder-flower water is, I think of no advantage, but rather the reverse, as these waters are principally employed, pharmaceutically, in collyriums, where the presence of spirit may be objectionable. Otto of roses should not be used for making rose-water unless it be intended merely as a perfume.\*

“Stone, or non-porous earthen jars, I believe preferable to glass for keeping the waters in; they should be furnished with taps placed about two inches from the bottom, with beaks sufficiently small to fit into the ordinary shop bottle, which may thus be easily filled. The heavier oil of cinnamon will sink to the bottom, whilst the lighter ones will float on the surface. The tap placed as directed will steer clear of both, and the water may be drawn as needed without trouble or inconvenience.

“Before quitting the subject, I will venture to add a word or two upon the operation of pickling. The proportion of salt which answers well is three pounds to one of flowers; they should

\* If the following description, which has been given of the method of obtaining otto, is, as no doubt it is, correct, there can be little or no genuine otto imported into this country, looking even at the largest price we pay for it:—“The Rose gardens at Ghazepore are fields in which small rose-bushes are planted in rows. In the morning they are red with blossoms, which are gathered before mid-day, and their leaves distilled in clay stills, with twice their weight of water. The water which comes over is placed in open vessels, covered with a moist muslin cloth to keep out the dust and flies, and exposed all night to the cool air or to artificial cold, as we set out milk to throw up its cream. In the morning a thin film of oil has collected on the surface, which is swept off with a feather and carefully transferred to a small vial. This is repeated night after night till nearly the whole of the oil is collected from the water. It is said that twenty thousand roses are required to yield a rupee weight (rather less than 170 grains) of pure oil, which sells for £10 sterling.”—*Hooker*.



be thoroughly mixed, and pressed rather compactly into the vessel in which they are to be kept; and for this purpose an olive oil jar, well cleaned, answers remarkably well."—*Pharmaceutical Journal*, July, 1856.

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## ON THE PURIFICATION OF AMORPHOUS PHOSPHORUS.

By E. NICKLÉS.

Amorphous phosphorus, incapable of spontaneous inflammation, is obtained by keeping ordinary phosphorus for some time at a temperature of between  $446^{\circ}$  and  $482^{\circ}$  F. in an inert atmosphere; but however long the treatment may be continued, there is always a portion of the phosphorus which escapes the transformation, and which must afterwards be got rid of completely in order to avoid destroying the essential properties of amorphous phosphorus.

The disadvantages of the mode of purification proposed by Schrötter have long been recognized; it is founded on the solvent action of sulphuret of carbon upon ordinary phosphorus, whilst it has no action upon the red variety. The operation, therefore, seems very simple, but in practice it is attended with much inconvenience and danger; the washings are interminable, and the chances of inflammation increase rapidly with the quantity of phosphorus under treatment. To avoid this danger, Schrötter recommends that the filter on which the washing is carried on should be kept constantly full of sulphuret of carbon, to prevent the ordinary phosphorus, which is deposited in a very finely divided state upon the edges of the filter, from causing the inflammation of the whole; but even this precaution is not sufficient to avoid accidents.

The author tried several methods of effecting the separation of the ordinary phosphorus by chemical means, but without success, and he has accordingly availed himself of the different densities of the two bodies to effect his purpose, by agitating them with a fluid of specific gravity intermediate between them. Amorphous phosphorus has a specific gravity of 2.106, and ordinary phosphorus of 1.77; a solution of chloride of calcium of  $38^{\circ}$  to  $40^{\circ}$  B. will serve for their separation; the ordinary phosphorus being lightest, floats on the surface, when it may be

easily taken up by a little sulphuret of carbon, and the operation may be carried on in a closed vessel.

The process is as follows :—A little sulphuret of carbon is put into the retort in which the conversion has been effected ; if the substance, which usually adheres strongly, is not detached, the bottom of the retort is dipped into luke-warm water, when the disaggregation of the substance takes place immediately with a slight noise. When the phosphorus is detached, the saline solution is added, the vessel is closed and shaken, and the sulphuret of carbon containing the ordinary phosphorus floats on the surface. If the proportion of the latter is not more than one-fourth, it may be completely got rid of by a single washing, but it is safer to decant the phosphorized sulphuret of carbon and replace it by a fresh quantity of pure sulphuret. This is necessary when the two forms are mixed in equal proportions, but the author says that three washings are always sufficient to remove every trace of ordinary phosphorus.

After separating the two liquids by decantation, the saline solution containing the amorphous phosphorus is poured upon a cloth, when the purity of the product is so perfect that there is no occasion to boil it with a solution of caustic potash. The whole operation may be completed in half an hour and without the least danger, so that it may be carried on even by inexperienced hands, which is of no small importance now that red phosphorus is an article of commerce.—*Chemical Gazette*, May 1856, from *Comptes Rendus*, April 1856.

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#### CONDITIONS OF SUCCESS AND CAUSES OF FAILURE IN PHOTOGRAPHY.

BABO\* has made a number of experiments relating to this subject. His results lead him to the opinion that absolute neutrality of the substances employed in producing the film of iodide of silver, is an essential condition. The collodion may be defective in this respect, a trace of free acid causing a decomposition of the iodine compound, and thus affecting the sensibility of the film of iodide of silver. The addition of finely divided

\* Berichten u. d. Verhandl. d. Gesell. für, Reförd. d. Naturwiss. zu Freiburg, 1855. and Ann. d. Phys. u. Chem.

silver to the collodion in order to remove free iodine, is not always attended with success, and after some time, silver decomposes the collodion, in the presence of iodine or iodide of potassium, rendering it thin and useless, a precipitate also being formed, containing, besides organic substance, iodate of silver. Again, the neutralization of the free acid by means of alkali, is very difficult of execution.

Babo finds that different compounds of iodine differ in the decomposing influence exercised by them upon collodion, and that this influence varies for the same compound, according to the proportions of ether, alcohol, and water, in the collodion. The greater the amount of the two former substances, the more durable is the collodion. He finds that for this purpose the most stable of the iodine compounds is the iodide of tetraethylamine. This is probably owing to the fact that, in the decomposition of this substance, iodic acid is not formed, but triiodide of tetraethylamine, which is less readily decomposed. The collodion prepared with iodide of potassium or of ammonium, is rendered much more stable by diluting it with ether and alcohol, adding a little iodide, and then boiling, previously to the addition of the whole of the iodide, with some pure urea, in an apparatus that admits of the ether being condensed and flowing back. By this means, any trace of nitric acid is removed. The collodion, which may in this operation have become slightly yellow, is then to be agitated with silver, and, when decolorized, decanted or filtered and mixed with the proper quantity of perfectly neutral iodide of potassium. A very sensitive preparation is thus obtained. It might, indeed, be advantageous before dissolving the cotton to boil it with a solution of urea.

The absence of any reducing substance is quite as essential as the neutrality of the collodion; aldehyde, sulphurous, pyrogallie, and formic acids, sulphuretted hydrogen, alloxantine, protoxide of iron, retard or neutralise the action of light. This would appear to account for the fact that collodion loses sensibility when kept long, for by the liberation of iodine, aldehyde is formed. It follows, moreover, that the alcohol and ether used in the preparation of collodion should be freshly distilled over caustic potash.

The presence of iodate of silver in collodion almost entirely

prevents the action of a faint light, and as this salt is formed by the action of iodine upon nitrate of silver, this is another cause of the slight sensibility of collodion containing free iodine.

When nitrate of silver solution is mixed in the dark with iodide of potassium in excess, then exposed to light and mixed with pyrogallie acid, no immediate reduction takes place. Further, iodide of silver precipitated with excess of iodide of potassium, collected on a filter and washed in the dark, is not sensitive. But when the amount of iodide of potassium mixed with the silver solution is insufficient to precipitate the whole of the silver, there is an immediate reduction of silver on the addition of pyrogallie acid. The same result takes place when pure iodide is mixed with some nitrate of silver, provided the amount is too small to determine the solution of any iodide, in which case the sensibility of the substance is reduced.

This circumstance is undoubtedly not only a frequent cause of failure, but also of uncertainty in the character of the picture produced. The quantity of silver, not converted into iodide, that is taken up by the collodion film, depends upon circumstances which are not always to be controlled. Among these, the strength of the silver solution, and the amount of iodine compound in the collodion are of prominent influence, but phenomena of diffusion must likewise be concerned within certain limits. The interchange of substances between the collodion and silver solution must be very complicated, dependent upon the amounts of alcohol and ether, indirectly upon the temperature, and upon the amount of undecomposed silver solution taken up, according to the nature of the iodine compound used. Babo is of opinion that in this respect a more certain result is obtained with ethylamine or urea salts, than with salts of potash or ammonia. He found collodion prepared according to the following formula, very suitable for silver solution, containing from eight to nine per cent. of silver salt:—

|                           |               |                             |
|---------------------------|---------------|-----------------------------|
| Pyroxyline                | 1 . . —       | For developing the picture. |
| Alcohol (80 per cent.)    | 30.0 . . 40.0 | Water 100                   |
| Ether                     | 50.0 . . 60.9 | Alcohol 20                  |
| Iodide of tetraethylamine | 0.5 . . 1.0   | Acetic Acid 30              |
|                           |               | Pyrogallie Acid 1           |

Attempts to substitute aldehyde, ammonia, alloxantine, phosphorous acid, &c. for pyrogallie acid, proved unsuccessful. The

best result was obtained with protosulphate of iron mixed with a few drops of phosphorous acid, but this liquid has the disadvantage of attacking the shadows, which is not the case with pyrogallic acid.—*Pharmaceutical Journal*, June, 1856.

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## NEW FORM OF ASTRINGENT APPLICATION.

By DR. WILLIAM BAYES, Brighton.

Pure glycerine dissolves nearly its own weight of tannin, affording a very powerful local astringent application.

The solution of tannin in pure glycerine appears to me to supply a desideratum long felt, and capable of a great variety of useful applications.

The solvent property of glycerine over tannin, allows us to form a lotion of any desirable strength, as the solution is readily miscible with water.

The solution of tannin in glycerine, in one or other of its strengths, is peculiarly applicable to many disorders of the mucous membrane, readily combining with mucus, and forming a non-evaporizable coating over dry membranes; hence it may with benefit be applied to the mucous membranes of the eye and ear in many of its diseased conditions. It forms a most convenient application to the vaginal uterine, urethral, or rectal membranes, where a strong and non-irritant astringent lotion is desired.

In local hæmorrhages, where the bleeding surface can easily be reached, it will prove very convenient, and may be applied either with a sponge or small brush.

The solution must be kept in the dark, and should not be prepared for any great length of time before used, or decomposition will occur.

It is singular that glycerine does not possess the same property towards gallic acid.—*Charleston Medical Journal*, from *Association Med. Jour.*

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## ON THE SOLUBILITY OF BONES IN WATER.

By PROF. WÖHLER.

Translated by J. M. Maisch.

If ground bones, as they are prepared at bone mills for agricultural purposes, are left in contact with water for some time.

the liquor, when filtered, contains phosphate of lime and phosphate of magnesia in solution. The same is the case if water be used, from which, by long continued boiling, all carbonic acid has been expelled. Water was filtered for several months through the same quantity of ground bones, constantly taking up some of the phosphates of those earths whose amount even seemed to increase as the organic matter of the bones, by its continued contact with water and air, was putrified, and the passed water became turbid and foetid. These facts appear to be not without their practical value for agriculture, as the earthy phosphates of the bones, without artificial preparation, may be dissolved, and thus carried to the ground, probably in a quantity which is just necessary for the functions they have to perform. For the use of ground bones, as manure, it would suffice perhaps to prepare them simply by keeping them during the summer time moist and in heaps.—(*Annalen d. Chem. and Pharm.*, April, 1856, p. 143.)

J. M. M.

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#### PREPARATION OF PURE SILVER FROM ITS ALLOY WITH COPPER.

By Dr. W. WICKE.

The alloy is dissolved in nitric acid, the excess of the acid expelled by boiling, the solution diluted with water and the oxides precipitated by an excess of carbonate of soda at an elevated temperature. By heating the carbonates with a solution of grape-sugar, the oxides are reduced, the oxide of copper to the sub-oxide, the oxide of silver to the metal. The reduction commences immediately, but the boiling must be continued for some time to insure the reduction of all the carbonate of silver. The precipitate is filtered; and while still moist treated with a warm solution of carbonate of ammonia, which dissolves the copper, leaving pure silver behind; the operation is continued until the carbonate of ammonia ceases to assume a blue color. The washing may be done by decantation. If the silver is not wholly reduced, the carbonate of ammonia will also dissolve carbonate of silver. I have boiled with grape-sugar about ten minutes, and the ammoniacal solution was free of silver.

Instead of using carbonate of soda, very likely the oxides may be precipitated from a hot solution by potassa and reduced as above stated.

This process is a simple one, and the operation takes but little time.—*Ibid.* p. 144. J. M. M.

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#### PREPARATION OF CUMARIN.

By PROF. WÖEHLER.

According to Dr. Goessmann, the best way to obtain cumarin is by the following process: Tonka beans are cut finely, and with about their volume of 80 per cent. alcohol heated to near the boiling point; after filtering, the residue is again treated in the same manner. Of the mixed liquors, alcohol is distilled off until they become turbid, and are then mixed with about four times the volume of distilled water, by which a crystalline precipitate of cumarin is produced. The mixture is boiled and run through a filter moistened with water, which keeps the precipitated fat back; pure cumarin crystallizes from the solution on cooling. By concentration of the mother liquor, the balance may be obtained, which, if not quite colorless, must be purified by animal charcoal. By this process Mr. Eastwick, Jr., obtained over 8 grammes of cumarin from one pound of tonka beans.—*Ibid.* p. 66.

J. M. M.

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#### ON THE SO-CALLED ALIZARIN INK.

By J. WINTERNITZ.

Every one who knows alizarin, the red coloring principle of dyer's madder, will expect a red ink to which the name of alizarin ink is applied, and he cannot fail to be astonished to find it, instead of a red, of a dark green color, and the writings with it soon change to dark blue and black. The above name, therefore, is a mystification, invented to conceal its ingredients and mode of preparation, and to mislead an attempted analysis. No doubt many have tried in vain to prepare such an article as it has appeared in commerce a short time since, from madder, but obtained an entirely different product.

The author has made an analysis of alizarin ink of commerce.

and found it to consist of ordinary black nutgall ink, with an admixture of crude wood vinegar and solution of indigo. He gives the following formula for preparing such an ink, which, in all its properties, is identical with the commercial article:—

100 parts of powdered nutgalls are digested with 1200 parts, by weight, of crude wood vinegar at a moderate heat for several days, then transferred to a filter, and washed with crude vinegar until the filtrate weighs 1200 parts. In this clear brown liquor, 12 parts of green vitriol and 50 parts of gum arabic are dissolved, this solution, under frequent agitation, set aside for several days, and at last so much solution of indigo added to make the whole 1500 parts, when immediately the ink assumes that peculiar dark green tint. The solution of indigo was made by dissolving one part of indigo in 4 parts of Nordhausen oil of vitriol, diluting with water, precipitating with carbonate of potassa, filtering, and washing the precipitate with water. When the sulphate of potassa is nearly washed away, the blue precipitate commences to dissolve; and this solution of the precipitate—the so-called indigocarmine—was used.—(*Wittstein's Vierteljahrsschrift*, v. 225.)

J. M. M.

#### PREPARATION OF THE OILS OF CROTON TIGLIUM, NUTMEGS, AND LAUREL BERRIES BY MEANS OF SULPHURET OF CARBON.

By M. LEPAGE, of Gisors.

M. Lepage, taking advantage of the great solvent power of bi-sulphuret of carbon, in view of the low price at which it can now be had in France, has prepared it as a means of extracting medicinal fixed oils from the tissues of plants containing them.

*Croton Oil.*—The croton seeds, well divided by grinding, are introduced into a bottle with three times their weight of sulphuret of carbon, which has been carefully rectified; allow it to stand twenty-four hours, with occasional agitation, and then express rapidly in a cloth. The dregs are mixed again with two parts of that solvent in the bottle, macerated again for twenty-four hours and again expressed strongly. The two products are united, filtered in a covered funnel, and then subjected to distillation in a glass retort with a water bath heat, with a good condensing



apparatus. As soon as the distillation ceases, pour the oily residue into a capsule, and after being assured that the last traces of the sulphuret have disappeared, put the oil in bottles for use.

The recovered solvent is pure and fit for use again. This process yields 52 per cent. of oil of equal activity with that obtained by other processes.

The oils of *Laurel berries* and *Nutmegs* can be readily prepared in the same way, by submitting these substances to the action of the sulphuret, with subsequent pressure, etc., and whilst the resulting oils are entirely free from the odor of the solvent, they retain their peculiar volatile oils, so as to be highly aromatic.—*Journ. de Chimie de Méd.*, Juillet, 1856.

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#### ON THE PRODUCTION OF VERY HIGH TEMPERATURES.

Sainte Claire Deville has published an extended description of the methods employed in his laboratory to produce high temperatures, and his paper possesses great value and interest. For operations on a small scale, Deville employs a lamp of peculiar construction, in which the vapor of oil of turpentine or any other liquid of hydro-carbon is completely burned by means of a powerful artificial blast of air. The lamp in question would be scarcely intelligible without a figure, and we must refer for fuller details of its construction to the original memoir. By its means a heat sufficient to melt feldspar can be easily produced, provided that the table bellows employed is of sufficient size and power. [We have found it in practice less safe and convenient than the gas blast lamps with sixteen jets, introduced by Sonnenschein, but gives a higher temperature. W. G.] The other apparatus described by the author is a blast furnace, in which platinum and many other substances can be fused. It consists of a cylinder of fire-clay 18 centimeters in diameter, and somewhat higher than its width. This may be surmounted by a dome, to prevent the escape of the coals from the force of the blast. This cylinder rests upon the edge of a hemispherical cavity, connecting with a good forge bellows. A circular piece of cast iron, pierced with openings about 10 millimeters in diameter, and disposed round the edge of the plate, forms the bottom of the cylinder and sepa-

rates it from the cavity below. The author employs as fuel, cinders from the hearth of a furnace heated with the dry coal of Charleroy. These cinders are found mixed with pieces of coal, and are sifted upon a sieve with square holes of 2 millimeters in the side. What passes through the sieve is rejected. The force of the maximum temperature begins about 2 or 3 centimeters above the iron plate, and is only 7 or 8 centimeters high. The coals employed must vary from the size of a small pea to that of a nut. The crucible is placed in the centre of the cylinder and surrounded with kindled wood, upon which pieces of coal of the size of a nut are laid, and upon these the proper fuel of the furnace. The blast is then forced in slowly and gradually increased. The coals above remain cold from the transformation of the carbonic acid into carbonic oxyd, which gas, in the author's furnace, burns with a flame 2 meters in height. The heat produced by this arrangement is called by the author the "blue heat," from its peculiar tint. In it the best ordinary crucibles run down like glass. The author uses three kinds of crucible. The first is of quicklime and is made of well burned lime, slightly hydraulic, which is cut with a knife or saw into prisms, with a square base 8 or 10 centimeters in the side, and 12 or 15 centimeters high. The edges are rounded and a hole is made in one end of convenient size. Sometimes an inner crucible is used, each having its own cover. When the substance to be heated is very refractory, only one crucible is used, and the walls of this are made 3 or 4 centimeters thick. The base of the crucible must be 5 or 6 centimeters below the bottom of the cavity. The space between the crucible and the walls of the cylinder must be 5 or 6 centimeters. In using a lime crucible, charcoal is first to be introduced, little by little, till the crucible is covered, the heat is then very gradually increased till the crucible becomes red, when the coals are removed to make sure that the crucible is not cracked, after which the heat may be urged to the utmost. The second kind of crucible is of carbon. The author uses gas-retort carbon and fashions it on a lathe. To free the material from impurities it may then be strongly heated in a current of chlorine, by which process it loses weight. These crucibles are placed within crucibles of lime, the intervening space being filled with calcined alumina. The third species of crucible is made of alumina, obtained by calcin-

ing ammonia-alum. Thus prepared it is plastic, but shrinks much on drying. To prevent this, the author mixes the mass with a calcined mixture of alumina and marble. A mixture of plastic alumina, calcined alumina and aluminate of lime, in equal parts, gives a very hard and infusible mass, which softens a little at the melting point of platinum. Once baked, these crucibles resist all tests; even sodium has no action on them. The lime crucibles may be used whenever the alkali is not injurious; the carbon crucibles have a more limited use in consequence of their reducing agency. The alumina crucibles may be used almost always when lime will not answer. With respect to the heat produced by this furnace the author gives the following details. Platinum fuses in a crucible of lime into a single well-united button. This platinum possesses properties very different from those of ordinary platinum condensed from the sponge. When copper is plated with the fused platinum rolled out into a very thin sheet, nitric acid has no action whatever, as it does not penetrate the leaf of metal. A plate made from fused platinum does not cause the union of oxygen and hydrogen even after several hours. Fused platinum possesses a perfect softness and malleability. In a crucible of carbon, platinum melts easily but yields a brittle alloy of platinum, carbon and silicon. By raising the heat above the temperature required for fusion, Deville succeeded in volatilizing the metal with remarkable ease, so that it condensed in small globules. Pure peroxyd of manganese heated with carbon from sugar in quantity less than sufficient to reduce the oxyd, gave fused metallic manganese as a brittle mass, having a rose reflection like bismuth and as easily reduced to powder. Its powder decomposed water at a little above the ordinary temperature. Chromium as prepared in a similar manner was well fused, but not into a button, at the temperature at which platinum volatilizes. The metal is brittle and cuts glass like a diamond. It is easily attacked by chlorhydric acid, but little by sulphuric acid, and not at all by nitric acid either strong or weak. Metallic nickel fuses to a homogeneous button, which may be forged with great facility. It has a ductility almost without limit and is more tenacious than iron in the ratio of 90 to 60, according to Wertheim's experiments. This nickel contained traces of silicon and copper. Fused cobalt is as ductile as nickel

and still more tenacious. According to Wertheim its tenacity is to that of iron as 115 to 60, or nearly double. The most refractory body which the author fused was silica, which, however, in quantities of 30 grammes was not perfectly liquified. The author considers the fusion of this body as the limit beyond which processes do not go.—*American Journal of Science and Arts*, from *Ann. de Chimie et de Physique*, xlv. 182, February, 1856.

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#### ON THE DETECTION OF IODINE IN MINERAL SPRINGS.

By J. LIEBIG.

When a very small quantity of an alkaline iodate, followed by sulphuric or muriatic acid, is added to a fluid which contains so small a quantity of metallic iodides that no distinct blue coloration can be obtained by starch and nitric acid, a far stronger reaction is obtained; hydriodic acid and iodic acid being separated, which become mutually converted into water and iodine, so that the amount of iodine set free is increased by the iodic acid added. Neither iodic acid nor iodide of potassium mixed with muriatic acid, colors starch.

When the mother-liquor of a mineral spring was mixed with starch-paste and muriatic acid, with the intention of adding iodic acid to it afterwards, the author observed that it produced as fine a blue color as can be produced by any of the known methods, by means of chlorine-water, hyponitrous acid, &c. The water of the Adelheid spring, the mother-liquor of the Reichenhall bath, and in fact all the waters containing iodine which he examined, behaved in exactly the same manner; with starch-paste, and the addition of pure muriatic acid and free from chlorine and iron, they gave as distinct a reaction as can be obtained with other very delicate reagents. The same muriatic acid gives not the least color with iodide of potassium and starch-paste, so that some body must exist in these waters which sets free the iodine of the iodide, or the liberated hydriodic acid, on the addition of a mineral acid. It seems probable that this may be due to the presence of nitrates, which the author found in these waters, and frequently in large proportion; but he does not feel certain that these are the cause of the reaction, as by mixing such salts with

iodide of potassium, and adding starch-paste and muriatic acid, the reactions were not nearly so delicate as with the mother-liquors, although the latter contained much more iodine in the form of iodides, than was employed in his experiments. The mother-liquors were free from persalts of iron, which might have caused the reaction.—*Chem. Gaz.*, June 1, 1856, from *Liebig's Annalen*, April 1856.

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### ON THE SILVERING AND GILDING OF GLASS.

By J. LIEBIG.

*Silvering Glass.*—At the request of M. von Steinheil, the author has made some experiments to discover a process for silvering glass *in the cold*, especially with a view to the production of faultless optical mirrors. The silvering fluid, which perfectly fulfils the desired end, is an ammoniacal solution of nitrate of silver with an addition of caustic potash or soda, which, when mixed with a solution of sugar of milk in water at ordinary temperatures, deposits the silver on the surface of the glass in the form of a mirror.

To prepare the fluid, 10 grms. of fused nitrate of silver are dissolved in 200 cub. centims. of water, and a sufficient amount of liquid ammonia is added to produce a clear solution. This is gradually diluted with 450 cub. centims. of a solution of potash of spec. grav. 1.05, or with the same volume of a solution of soda of 1.035. On the addition of this, a blackish-brown precipitate is usually produced, which must be at once dissolved by a fresh addition of liquid ammonia. The mixture is diluted with so much water as to bring it to 1450 cub. centims. A dilute solution of nitrate of silver is then dropped in until the production of a strong gray precipitate (not turbidity), when the mixture is brought to 1500 cub. centims. by the addition of water. Each cubic centimetre thus contains a little more than 6.66 milligrms. of nitrate of silver, or 4.18 milligrms. of silver. To produce a clean mirror, the fluid should contain no free ammonia, but this must be completely saturated with oxide of silver. For this purpose some of the solution of silver may be kept back and added at the end; and in this case 1 cub. centim. of the solution contains rather less than 4.18 milligrms. of silver.

The solution of potash or soda must be free from chlorides ; pure carbonate of soda or potash must be dissolved in water, and rendered caustic by hydrate of lime previously freed from all chloride by washing with distilled water. The solution is not filtered, but left to stand until it becomes perfectly clear.

Immediately before the application of this fluid, it is mixed with one-tenth to one-eighth of its volume of solution of sugar of milk, containing 1 part in 19 parts of water.

In silvering small concave or convex mirrors, a stick or brass hook is attached to the back of the glass by a resinous cement, so as to enable the glass to be suspended horizontally. It is suspended over a suitable glass or porcelain saucer, with the surface to be silvered about half an inch from the bottom of the vessel, and the fluid previously mixed with the solution of sugar of milk is poured in until the whole surface of the glass is immersed.

For the production of flat mirrors the author recommends vessels of gutta percha, cut out of a flat piece so as to have a margin of about an inch all round the glass. This is turned up after the gutta percha has been softened in hot water, and the corners are made water-tight by the application of a hot spatula or knife. The glass is supported, at a distance of half an inch from the bottom of the vessel, by means of small cones of gutta percha at the corners, and the space between the surface of the glass and the bottom is then filled with the silvering fluid. The author admits that these arrangements are very imperfect, and that many improvements might be introduced, but the glass should always be suspended at the surface of the fluid.

The reduction of the silver takes place instantly upon the mixture of the alkaline solution of silver with the sugar of milk ; the mixture immediately acquires a dark color. In a few minutes the glass plate appears black ; in a quarter of an hour it becomes bright, and the reduction is complete when the fluid between the edge of the glass and the wall of the vessel is covered with a white specular coat of silver. Of course the whole of the silver in the solution is precipitated, and only a very small portion of it goes to form the mirror. The quantity of silver attached to a surface of 226 square centims. was 49 milligrms. The silvering of a mirror of 1 metre square would consequently take 2.210 grms.

of silver. The quantity of fluid required to silver a glass of 226 square centims. was 280 cub. centims., containing 1170 milligrms. of silver, so that  $1170 - 49 = 1121$  milligrms. of silver are thrown down in the fluid and on the walls of the vessel; this must be collected, and again converted into nitrate of silver, and some loss is unavoidable.

When silvered, the glass plate is taken out of the fluid, washed with warm distilled water, and dried in a warm place. Care must be taken, in removing and washing the plate, not to injure the silver coat with the fingers, as otherwise the water penetrates by capillary attraction through the injured spot, and separates the coat of silver from the glass. When dried, the silver adheres so strongly to the glass that it can hardly be rubbed off with the finger. It forms a very beautiful, somewhat opalescent mirror, which may be converted into a perfect silver mirror by careful polishing with fine rouge and velvet. A good deal depends on the cleaning of the glass in the production of perfect mirrors.

The distance between the bottom of the vessel and the surface of the glass must be exactly equal throughout, as otherwise the thickness of the coat of silver will be unequal, and the places where it is thinnest will appear darker than the rest. The smallest bubble of air also will cause a small vacancy in the coating, and the author has found it advantageous to moisten the surface of the glass in the first place with alcohol, as this displaces the adherent stratum of air more readily than water.

When placed at the bottom of the vessel the glass plate is just as completely coated, but the whole of the silver in the solution is precipitated upon it in the form of a gray powder, which adheres so strongly that it can only be got rid of by mechanical means, which endanger the mirror itself. The cost is also greatly increased.

Before putting it into a frame, the dry mirror is warmed a little, and coated with a thin colorless varnish. For this purpose a solution of dammara resin in alcohol is very good.

*Gilding of Glass.*—Glass can only be permanently and brilliantly gilt with the assistance of heat. Gilding effected in the cold is of beautiful color and lustre, but does not adhere, and detaches itself from the glass by washing with water.

The gilding fluid is prepared by dissolving pure gold in nitro-

muriatic acid, adding 292 milligrms. of chloride of sodium to the solution for every gramme of gold, evaporating to dryness, and heating the residue until all free acid is driven off. The double salt is then dissolved in water, and water is added until each 100 cub. centims. of fluid contains exactly 1 grm. of gold. 50 cub. centims. of this solution are mixed with 20 cub. centims. of a solution of soda of spec. grav. 1.035, and 300 cub. centims. of water in a glass flask, and boiled until it is reduced to 250 cub. centims. ; and another 50 cub. centims. of the solution, mixed with 20 cub. centims. of the same solution of soda and 230 cub. centims. of water, are kept for an hour in boiling water. The two fluids are then mixed together, and must be employed in gilding whilst fresh.

To gild the inside of a glass vessel, a tenth part of its volume of a mixture of 2 parts of alcohol and 1 part of ether is poured into it, and it is then filled up with the hot gold solution. The vessel is then set in water, the temperature of which must not rise above 176° F. In from ten to fifteen minutes its inner surface is covered with a brilliant golden film, and the vessel is removed from the water when its walls are opaque, or exhibit a deep green color by transmitted light.

The alkaline solution of gold is of course always reduced by the alcohol, but the glass only acquires its brilliant golden coat when the fluid is of such a nature that the adhesion of the gold to the glass may be somewhat stronger than that to the water ; in the former case the gold is precipitated only on the glass, in the latter only in the fluid. It is very difficult to hit this point exactly, and the smallest error in the mixture renders success impossible. The author adds, that he has obtained the most beautiful gilding by this means, whilst in other cases he has failed entirely, without being able to discover the cause, so that he does not think this method will be of general application. The mixture will only act whilst fresh, when it has a very slight yellowish tinge ; by standing it becomes colorless. Alcohol reduces the gold from the colorless fluid with difficulty.—*Ibid*, from *Liebig's Annalen*, April 1856.



ON THE CONVERSION OF TANNIC INTO GALLIC ACID IN THE  
EXTRACTS OF TANNING SUBSTANCES.

By PROF. CALVERT, of Manchester, Eng.

During a recent visit of M. Calvert to Paris, he read several papers at the session of the Société de Pharmacie of June the 4th, 1856, and among them one with the above caption. The first experiments were to determine the special action of tannic and gallic acids in the dyer's vat by dipping pieces of mordanted stuff in solutions of tannin and gallic acid of definite strength and at different temperatures. It resulted that the gallic acid liquid quickly dyed the tissue, but was very evanescent, whilst the tannin solution acted more slowly, giving a permanent dye. These facts induced the belief that gallic acid acted on the mordant by reducing the iron to protoxide, and on testing the liquor of the bath he found a large quantity of protoxide of iron; whilst, in the other tannic liquor, no reduction had occurred. This property of gallic acid increases in the presence of hydrochloric, sulphuric and oxalic acids, whence it follows that gallic acid cannot be used for dyeing when in excess or in presence of other acids, whilst in the case of tannic acid, acids, except in decided excess, do not favor reduction. He believes, in consequence, that under the influence of a great excess of mineral acid, tannic acid is separated into sugar and gallic acid, and the last substance acts as a reducer. These facts explain why calcareous water is found to yield the best blacks.

M. Calvert then tried the relative behaviour of these acids with alumina mordant. Pieces of calico previously mordanted were put in baths of gallic and tannic acids at  $212^{\circ}$  F., for  $2\frac{1}{2}$  hours. The specimens were then withdrawn, washed with distilled water, and tinted with madder. The specimen with gallic acid was nearly colorless, whilst the other was of a beautiful deep red. Other experiments were tried with the same result; but to remove all doubt the author added pure hydrate of alumina to a solution of each of these acids, when he found that the gallic acid dissolved the alumina, whilst the tannic acid did not effect it.

The author tried to obtain reds and blacks with an extract of sumach long made, and had not succeeded, probably because its tannin was converted into gallic acid. He found that whilst a

few weeks' time was sufficient to effect the change in the extract, years may elapse before the plant itself is so affected, owing probably to the presence of water in the former.

In view of this change being a species of fermentation, as shown by MM. Delarocque and Robiquet, the author sought for an agent which, whilst it would not interfere with the proper function of the extract as a dye, would prevent the transformation of the tannin.

The result of his research was that chloride of lime, corrosive sublimate, and carbolic acid (or mineral tar creasote), were each capable of arresting the change; the latter being the most active and least interfering with the process.\*

The author says that a solution of gallic acid would dissolve metallic iron with the elimination of hydrogen, whilst with a solution of tannin no gas is given off, though the solution is stained, probably owing to the presence of a little oxide of iron.—*Jour. de Pharm. et de Chimie, Juillet, 1856.*

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#### MEDICINE IN TURKEY.

Service in the Ottoman army, medical or otherwise, offers no inducements whatever to young Americans. Of actual want one suffers little, but must submit to humiliating embarrassment; while the society of even the first officers cannot possibly be agreeable to a person who is cultivated, or accustomed even to the mere decencies of life. The Turks are slow to perceive merit, and still slower to reward it. The first, and almost the only word of English they learn, is *to-morrow*; and, however gentle and urbane the Mussulman may be in private life, he is a paragon of intrigue and overbearing treatment in office. Foreigners who enter the Turkish service appear to adopt permanently their worst peculiarities. It was related to me by an Italian, in the service at Silistria, that Achmet Pasha once caused several of his physicians to be tied up and flogged, in the presence of the troops. We hear much of foreigners in the Ottoman service; but very few of them, surgeons excepted, ac-

[\*NOTE.—The presence of oil of cloves and some other substances in ink probably act as carbolic acid in preventing the transformation of tannic acid, and whilst thus preventing mould preserves the coloring qualities of the ink.—EDITOR AMER. JOUR. PHARM.]

quire positions of any importance in the army. Their connexion with the service is nominal, rather than actual.

Mussulmen are averse to surgical operations. Surgery is, in fact, rarely called into requisition in the Turkish camp. During the affair of Kalefat, in which 12,000 Turks perished from cold, fatigue, and sorties against the Russians, and when patient Mussulmen became furious maniacs through extreme suffering, but one grave surgical operation was performed, whereas hundreds of lives might have been saved by judicious management.

Comparatively few Turks practise medicine. The professors of the healing art, in the Orient, are mostly Greek and Italian adventurers, who make the simple Moslems the dupes of their charlatanism. The Imperial license to practise anywhere in the Sultan's dominions can be obtained for a few piastres. Even those who are employed professionally in the Seraglio, and penetrate the mysterious harems of Turkish grandees, do not hesitate to administer preparations followed by the most fatal effects. They do indeed profess to teach medicine in the schools attached to the mosques, after the doctrines of Avicenna, Averroes, and other Arab authors; but the practice is founded upon no definite system. The believer in fatality does not fear death; and this is the principal reason why, in times of the plague and cholera, the Turks suffer less than the timid Greeks and Armenians.

The most valuable drugs are to be found in the bazaars; but, in consequence of the profound ignorance of the rudiments of chemistry among the Turks, the pharmaceutical preparations sold in the shops are gross and inefficacious. Distilled water is the ordinary medium for administering medicines.

The Mussulmen Hakims divide all diseases into two classes—nervous affections of the face, and those of an erysipelatous character; and secondly, all maladies not included in the above.

Among the Græco-Slaves, as with the Turks, surgery is monopolised by the knights of the razor. The practice of medicine is confined, for the most part, to magicians and sorcerers. There are no midwives; nature renders them superfluous. The mountaineers have a very efficacious method of treating wounds received in their almost perpetual conflicts. Intermittent fever and dysentery are the prevalent diseases of the climate. As among all uncivilized or half-civilized people, the absence of

favorable circumstances causes the premature death of feeble children. Those only who possess vigorous constitutions live to maturity, while their natural strength is increased by a temperate manner of life, especially in mountainous regions. A rapid increase of population is thereby prevented; but those who survive are more healthy and vigorous than the majority in civilized countries. When a person is attacked with any disease, he at once avails himself of the exorcising prayers of his pope or priest, and then drinks largely of cold water. Hydropathy has, in fact, been in vogue for ages with the Græco-Slaves.—*American Medical Monthly*.

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### THE CHEMICAL TESTS FOR STRYCHNIA.

By MR. WILLIAM COPNEY.

Perhaps there is no class of the community, the attention of which has been more properly arrested by the Rugeley tragedy, than that of Pharmaceutical Chemists. To them is entrusted the responsibility of preparing, keeping, or dispensing the potent drug, which, by a verdict not of the jury only, but almost of the entire country, was the agent by means of which the poisoner effected his foul purpose.

Whatever opinions may have been entertained as to the necessity and importance of a befitting education on the part of those who are in the habit of compounding medicines containing, in many instances, ingredients of the most energetic nature, there are none, at the present time at least, who would be disposed to call in question its utility. It is not, however, a matter of education only—it is not merely necessary that the Pharmaceutist should be able to recognize the potent agents which surround him, by the physical and chemical properties which distinguish them, or that he should be familiar with their ordinary doses; there rests upon him a moral responsibility: rigid and unceasing care, order and accuracy, must ever be added to chemical knowledge.

In whatever state the recent event found the knowledge of the Pharmaceutist in regard to the characters of strychnia, so much has been said and written about it, that, now at least, it is

an element of the *Materia Medica* with which he may be supposed to be especially familiar.

To those, however, who have not repeated for themselves the tests by which it may be infallibly recognized, or to those who, having done so, are yet in doubt as to their delicacy, the following may not be unwelcome.

It is not intended to offer any opinion as to whether strychnia, after its exhibition as a poison, and when death has ensued from a *minimum* quantity—when that quantity has been so nicely adjusted that the whole is absorbed before death takes place, or whether, when the body is in a state of advanced decomposition, it may, or may not, be always extracted, but simply to assert the extreme delicacy of the chemical tests; such delicacy indeed do they possess, that it may be fairly stated, that in every case where these give no indications, one of three things must obtain—either that no strychnia has been taken, or, that it cannot *always* be extracted, or, that the process adopted for its elimination was faulty.

Organic poisons, as a class, are admitted on all hands to be less readily recoverable, and even when obtained, to be with much less certainty distinguished than the inorganic. Every practical Chemist knows, that when some of these have entered into combination with other substances, more especially gallic or tannic acids, they are separated with the utmost difficulty. The detection of strychnia, however, is less uncertain; perhaps there is no substance with which the toxicologist has to deal, not excepting arsenic, which displays such distinct and constant features as this.

The principle of the tests is the supply of nascent oxygen; almost any substance, therefore, which will supply this element, when acted on by sulphuric acid, is suitable for the purpose. The same in principle is the application of the galvanic current as proposed by Dr. Letheby, which, moreover, has the advantage of being free from all fallacy dependent upon the presence of other bodies.

There are two conditions necessary to the success of the test—that the strychnia should be obtained in the state of dryness, and that the sulphuric acid employed should be concentrated, not

of a lesser specific gravity than 1.840. An acid whose density is 1.500 is still better.

The substances hitherto employed are binoxide of lead, binoxide of manganese, chlorate of potash, and bichromate of potash. According to my experiments the chlorate of potash is the least valuable, much better the binoxide of lead, better still binoxide of manganese, and best of all, bichromate of potash.

The first thing to be done is the preparation of a solution of strychnia of determinate strength—one grain in 500 minims is a convenient proportion. The solution is readily effected by using equal proportions of rectified spirit and distilled water acidulated with sulphuric acid.

Place one minim of this solution upon a clean white porcelain capsule, and evaporate at a gentle heat to dryness, now add a drop of sulphuric acid, and intimately mix; introduce a small fragment of bichromate of potash, and draw it across the spot. Where the quantity of strychnia is as great as in this experiment *i. e.* the 1-500th of a grain, a saturated solution of the bichromate may be used, and is, in some respects, better, but it is necessary to use it judiciously; a pointed glass rod is dipped into the solution, and enough allowed to remain upon it without dropping; wherever the point of this touches the mixture, the color is developed. This color is blue, which is succeeded by purple, crimson, red, and green, the latter in some instances being eventually replaced by yellow. (These colors are well seen if a small fragment of strychnia be placed in a narrow test tube, and a sufficient quantity of sulphuric acid added to smear the inner surface on inclining and turning the tube about. A little pounded bichromate of potash being introduced, and the tube held so as to trail the acid over it, the most magnificent colors are brought out.) A given quantity of the solution is now mixed with an equal proportion of distilled water, each minim then containing a thousandth part of a grain; from the solution thus formed, it is easy to obtain others of any degree of dilution that may be desired. This dilution may be carried to such an extent, that the 1-500,000th part of a grain may be faintly detected, beyond which I have not succeeded. The method by which this latter quantity was shown, is as follows: prepare a solution of such a strength that one minim shall exactly equal the 1-125,000th

of a grain. Draw out a glass tube of narrow bore to such a degree of fineness, that twenty drops from it shall equal five minims. Allow one of these drops (*i. e.* a quarter of a minim = 1-500,000th of a grain) to fall in the centre of the capsule. Evaporate carefully without stirring, and test as before. The strychnia will be found, upon close inspection, to have collected itself into a ring more or less complete; wherever this is crossed by the test, the color may be faintly seen. The object of using a quarter of a minim, is to circumscribe the deposit; for the same reason it is not stirred during evaporation. No chemist would perhaps be disposed to assert an opinion upon the faint color afforded by this experiment, which is only put forth as an evidence of the extreme delicacy of the test.

*Antimony* was found in the body of Cook. A question arose as to what effect this might have in causing the elimination of the poison, either through the kidneys or other channels; or supposing some strychnia still to remain, to what extent it would mask or prevent the action of the tests. The latter part of this question is, I think, undoubtedly disposed of. The most decisive experiments on this point are perhaps those of Mr. Rodgers. In all cases the strychnia appears to have been recovered unchanged. Whatever effect the presence of antimony, in any of its combinations, might seem to have while in actual contact with strychnia, there need be no longer any doubt that it may be separated from it, and even shown, more or less distinctly, while mixed with it. It may be here observed, that although the suggestion claimed attention from the importance of the subject, both *per se* and in reference to the culprit, it was one which has been truly said, would not, at any other time, have received a moment's consideration. It is not usual for a chemist to apply the tests of any body, at least in toxicological inquiries, while others, which may by possibility be separated from it, are still present.

It must be confessed, however, that some good has arisen out of the inquiry; and it is possible that there is something yet to learn about it. One thing has been undoubtedly shown — that the solubility of strychnia (in water) is greatly increased by the presence of tartar emetic.

The following experiments may not be uninteresting :—

1. One grain of strychnia and ten grains of tartar emetic were boiled in an ounce of distilled water. Nearly a clear solution was obtained. When cold, crystals were deposited, which, on being tested, showed the presence of both antimony and strychnia, the latter almost more distinctly than by itself. The crystals were remarkable; they were neither the prismatic crystals of strychnia, nor the octahedra of tartar emetic, but apparently some combination of the two substances.

2. One grain of strychnia and ten grains of the orange sulphuret of antimony were boiled as before. When cool, no crystals were obtained, but simply a deposit, apparently identical with the sulphuret. On testing this, the presence of strychnia was shown even through the orange-colored mass. The object of using this substance was to learn whether antimony, when in combination with sulphur, a circumstance not unlikely to happen in the decomposing body of Cook, would in any way affect the strychnia.

3. One grain of strychnia and one grain of tartar emetic were boiled in two ounces of distilled water. Very nearly the whole of the strychnia dissolved. No crystals were deposited on cooling, but a slight amorphous deposit, rich in antimony, had collected upon the surface of the dish. A portion of the liquid was evaporated and tested for strychnia, which was shown most distinctly. The liquid was now examined for antimony; on adding sulphuretted hydrogen very faint traces were shown; for greater certainty, some of the liquid was transferred to a clean Marsh's apparatus—antimoniuretted hydrogen was obtained, which, being burnt, afforded a stain, which was subsequently found to be antimony. To the rest of the liquid, ammonia was added; after a short time, long shining needles were formed, these, being separated by filtration, were found to be strychnia.

Perhaps the point most worthy of notice in this experiment, is the greatly increased solubility of strychnia in presence of antimony, which gives rise to thoughts as to what might take place in the yet living body—how far the system might be drained of the poison by the energetic eliminating powers of antimony. Not unworthy of attention also is the nature of the compound formed, and which is retained in the solution.

4. A drop of a solution, which contained the 1-250th part of



a grain in each drop, was placed in the centre of a capsule and carefully evaporated; a quarter of a grain of tartar emetic was added and two drops of sulphuric acid; these were intimately mixed; on adding the bichromate of potash very indistinct evidence of strychnia was given. By using more bichromate of potash and a little more acid, the color was somewhat more developed, but only for an instant, the whole quickly becoming green. On repeating this experiment several times, in varying proportions, it was found, that although the evidence of strychnia was rarely entirely lost, it did not give satisfactory proof of its presence. Thus it was, it may be presumed, that in the earlier experiments, the presence of antimony (tartar emetic?) was supposed to invalidate and render the test useless. But, as before observed, no chemist would think of testing for a substance under circumstances like these. There is a long list of substances which would act in a similar manner; in fact, any body capable of deoxidizing the chromic acid liberated by the sulphuric, will mar the test more or less. In this instance, it may be presumed, that the oxide of antimony set at liberty by the sulphuric acid, is raised to a higher oxide (antimonic acid) at the expense of the chromic acid. The strychnia, however, in every case remains unchanged, and is there still—by supersaturating with ammonia, as recommended by Mr. Rodgers, and agitating with chloroform, the strychnia is recovered, in no way the worse for its companionship.

Discarding theory, an experiment was made to ascertain whether, after the colors have been produced in the ordinary manner, the strychnia may even then be reproduced, which ended in a negative result.

To determine further, whether the prevention or masking of the test, when tartar emetic was present, really depended upon the oxide of antimony, an experiment was made, in which bitartrate of potash was added, in lieu of the tartar-emetic—these elements (potash and tartaric acid) being in combination with the antimony. As anticipated, no effect whatever was produced, the colors coming out as perfectly as though this body had not been present.

While these experiments were being proceeded with, a bottle containing strychnia and some strong solution of sulphide of am-

monium, was brought to me by Mr. John Randall, of Portman Street, who had mixed these ingredients together, and had submitted the mixture to an elevated temperature for some hours, with a view to ascertain what effect this agent might have upon the poison, as one with which the latter might come into contact in the case of decomposing structures. On evaporating a small portion of it in a watch-glass, and testing in the usual manner, no satisfactory evidence of strychnia was afforded, less even than in the case of tartar emetic. Believing that this result might be due to the presence of sulphur acting analogously to the oxide of antimony, a little dilute acid was added to a portion of the same solution. The sulphur separated; on filtering the liquid, and evaporating a little of the filtrate and testing it as usual, the presence of strychnia became distinctly evident.

*St. Mary's Hospital.*

Since the preceding was in type, a letter, read before the Royal Society, signed W. B. Herapath, has come under my notice.

This eminent toxologist states that by the formation of Iodostrychnine "it is possible to recognize the 10,000th part of a grain of strychnia in solution."

The crystals are recognised by their optical properties when examined by the polarizing microscope.

## ON THE PRECIPITATION OF PROTOCHLORIDE OF ANTIMONY BY WATER.

By M. E. BAUDRIMONT.

Protochloride of antimony, when exposed to the air, deliquesces without decomposition; and if a certain quantity of water be added to it in this state, it gives an abundant white precipitate, known by the name of *powder of Algaroth*. In this case the water decomposes the protochloride of antimony into a precipitate of hydrated oxychloride of that metal, and muriatic acid which remains in the liquid. The powder of Algaroth may be redissolved in the same liquid in which it was formed by the addition of a little muriatic acid, and the precipitate may be reproduced by a fresh addition of water. The author has repeated this experiment twenty times upon the same portion of

protochloride of antimony, but at each operation it was necessary to increase the quantity of liquid employed.

The explanation given by the author of these curious reactions is as follows:—Protoxide of antimony is one of those compounds placed at the extreme limit of acids and bases, the parts of which it can assume by turns. In presence of muriatic acid it will exert a property in antagonism with the latter, and will be basic. In the presence of water, on the contrary, it will change its part, and become acid in relation to this, which will act as a base. Now the acidity or basicity of  $\text{Sb}^2\text{O}^3$  will depend on the proportions of water or muriatic acid which it encounters. When the acid predominates, it will become basic; by making the water predominate,  $\text{Sb}^2\text{O}^3$  will be converted into an acid. A new addition of  $\text{ClH}$  will again change the office of  $\text{Sb}^2\text{O}^3$ , and so on.

A mixture of 100 parts of water and 15 parts of muriatic acid with 16 equivs. of water, will keep protochloride of antimony in a solution which is on the brink of precipitation; the addition of a drop of water whitens it, and a drop of acid restores its limpidity. These proportions of water and acid are, therefore, as it were, the measure of their respective forces as chemical agents.—*Chem. Gaz.*, July 1, 1856, from *Comptes Rendus*, May 5, 1856.

## Varieties.

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*On the employment of Hyposulphite of Soda in Analytical Chemistry.* By Dr. W. VOHL.—The author recommends, with Himly, the more frequent employment of hyposulphite of soda in analysis, instead of sulphuretted hydrogen. According to him, it can also be used to evolve sulphuretted hydrogen: if a piece of zinc is placed in dilute hydrochloric acid, and a few drops of a solution of hyposulphite of soda added, sulphuretted hydrogen is evolved. If now to this mixture a solution of salt of lead, bismuth, cadmium, &c., is added, the sulphurets of the corresponding metals are precipitated.—*London Pharm. Jour. from Ann. der Chem. und Pharm.*

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*Characters of the Flame of Bisulphide of Carbon.*—In most kinds of flame red and yellow light preponderates so largely, that the chemical and fluorescent action is very small. Babo and Müller find that the flame of a mixture of binoxide of nitrogen and bisulphide of carbon differs in this respect from others. Quinine-solution, fluor-spar, solution of chlorophyll in ether, and uranium glass, illuminated by this flame, present the phenomena of fluorescence in a high degree.

The prismatic analysis of this light gives a perfect spectrum, in which the violet portion is unusually intense. The spectrum does not present black lines, but three bright lines, two in the yellow and one in the green, one of the former being the brightest and one faintest.

This flame was found to have a very powerful photographic action. Distinct pictures could be obtained on collodion by exposure for one second, when the object was from a foot to a foot-and-a-half from the flame, with a consumption of two litres of the mixture, while the flame of coal-gas in an argand burner fed with oxygen in the centre, produced no effect within ten or fifteen seconds. Drummond's lime-light produced only a faint effect, and the flame of phosphorus in oxygen produced in ten seconds an effect only equal to that of the mixture in one-and-a-half second.

The greater action of this light might be partially owing to the quantity of light generated by the rapidity of the combustion, but experiments with a regulated flame one-and-a-half inch long, showed that the photographic action was, after ten seconds, nearly as great as that of the flame of phosphorus in oxygen, and consequently, that the chemical energy of this flame is not proportionate to the luminous intensity, and is much greater than that of any flame hitherto examined.—*London Pharm. Journal.*

*Manufacture of Chinese Porcelain.*—In presenting to the Academy of Sciences the important work of M. Stanislas Julien on Chinese porcelain, a work mentioned in my last communication, M. Chevreul gave a brief review of its contents.

The art of making porcelain has been carried back to an exaggerated antiquity. It is now demonstrated that the earliest porcelains were made in China at an epoch between 185 B. C. and 87 A. D. The porcelain vases found in the tombs of Egypt are not of the antiquity attributed to them. M. Julien has contributed not a little to correct this error.

The Chinese author passes in review, according to the order of time and place of fabrication, the different porcelains most renowned in China. A chart of that empire indicates the location of the ancient and modern manufactures, adding much to the interest of the text. The idea of this is due to the learned translator. The processes of manufacture are described with clearness and method, and fourteen plates are reproduced from the original work. Finally the very precise notes of M. Salvétat, dissipate the doubt in which the text might leave the reader.

The interest of the book is not limited to an exhibition of the manufacture of Chinese porcelain, for M. Julien, in annexing to his translation of the *Art of making Japanese Porcelain*, has done all which depended on him to render his book useful to those who consult the book from an interest in the history of the art or in the ceramic industry.

M. Julien has also given the means of comparing the processes of China and Japan with those of Europe; a task entrusted to M. Salvétat. The analogies and differences of manufacture could not be shown with more clearness than is here done by the skilful chemist of Sèvres. The Chinese paste, like the European, is composed of a variable mixture of *kaolin*, that is, of a material infusible in the heat of the porcelain furnace, and of material which is fusible; the glazing is of fusible material. This is the analogy. The difference is that the fusible material mixed with the composition in China is flint, but at Sèvres it is composed of sandy matter coming from the washing of kaolin and chalk. The glazing of Chinese porcelain is flint mixed with lime and frequently with frit. The glazing at Sèvres is of pure flint. The porcelain of China is less resistant to fire than that of Sèvres. The Chinese do not, like the Japanese and Europeans, apply the glazing to the biscuit. There are other differences in the application of the coloring matters and in the composition of some of the varieties. The typography of this work does honor in every respect to M. Mallet-Bachelier.—*American Journal of Science and Arts.*

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*Peculiar arrangement of a Voltaic Battery.*—This battery is designed for medicinal uses. It has been contrived by a constructor at Paris, M. Breton, and is maintained in a state of constant moisture with chloride of calcium. For one of the poles there is a mixture of copper filings with saw-dust, the

latter designed to separate the metallic particles,—the filings are mixed with a solution of chloride of calcium. The other pole is a similar mixture in which the copper is replaced by zinc filings. These two preparations placed in a vase and separated by a porous cell, make a battery which has the same intensity of action on account of its constant humidity and the indefinite number of its elements.—*American Journal of Science and Arts.*

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*Paper from Jute.*—M. D. L. NASH, writing from Chester, makes the following suggestion:—"Jute is one of the most remarkable articles of commerce in Liverpool. It is an East India grass in bales, of which (according to Braithwaite Pool's valuable work on the commerce of Liverpool,) there are nearly 100,000 bales annually, the average selling price £20 per bale. This grass is sent to Dundee and the north, and the fibre so resembles caterpillar's thread, that it is used to adulterate silk. It is made into coverings called "baggings," to serve as wrappers for the American cotton. It is sent back to Liverpool so manufactured, and exported to South America, where it is filled with the cotton, sent back in cotton bales to Liverpool, thence to Manchester, and finally finds its way to the paper makers. Now there is no reason why an ample supply should not be had for paper; and perhaps a notice of the matter may obtain the attention of the scientific."—*Liverpool Northern Times.*

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*The Telegraph in Switzerland.*—The telegraph in Switzerland is an institution that is much more successful than its polytechnic school promises to be. If even I felt competent to describe its perfect technical operation, I should not enlarge on this subject, as it is well known in America; but the liberality of the institution and the pecuniary results obtained from it, are worth mentioning. 25 words or less are uniformly paid by 1 franc, (17½ cents,) whether the message has to go 150 or only 2 miles. The public are induced by this cheapness to use the telegraph as freely as they use the mails, and the result is that the administration of the telegraph, which is under the control of government, has a surplus of cash in its coffers.

Almost every small town of 3000 to 5000 inhabitants has its telegraph office; of course, it would not pay to have a special telegraph office in each of these places, and therefore, the officers appointed by the central post-office are at the same time officers of the telegraph, though their duties concerning the expedition of letters often prevent them from attending to the telegraph; but as the administration of the telegraph pays them partly, according to the amount of messages received at their offices, they have to provide for the performance of these duties; they, of course, seek to supply them by the cheapest clerks; they can have and find them in their wives, sisters, or daughters, and I have been assured by one of the superior officers of the telegraph, that at those offices where ladies are the performers, the business is generally done more perfectly than where men are exclusively appointed to attend.—*Journal of Franklin Institute.*

*Arrow Root*.—It is stated that the arrow-root crop of the Bermudas is an almost complete failure, in consequence of the severity of last winter. We hope that this fact will induce greater attention to the culture of this popular and most useful fecula in Georgia and Florida, where it has been raised in small quantities for some time past. It is most desirable that we should be dependent on foreign sources for as few as possible of the articles of the materia medica, and the domestication of the large number of foreign articles which can be profitably cultivated on our own soil, is a subject deserving the consideration, not only of pharmacutists, but of agriculturists and political economists also.—*Virginia Medical Journal*.

ON CHINESE ALUM\*.—About eleven hundred tons of alum have been exported [from Ningpo] within a short period, chiefly to India. This mineral is largely employed by the Chinese in dyeing, and to some extent in paper-making as with us. Surgeons apply it variously after depriving it of its water of crystallization, and in domestic life it is used for precipitating vegetable substance suspended in potable water. It is used also by the Chinese in a manner peculiar to themselves. Fishermen are usually provided with it, and when they take one of those huge thizostoma, which abound on the coast, they rub the animal with the pulverized styptic to give a degree of coherence to the gelatinous mass. Architects employ it as a cement in those airy bridges which span the watercourses. It is poured in a molten state into the interstices of the stones, and in structures not exposed to constant moisture, the cohesion is perfect, but in damp situations it becomes a hydrate and crumbles, a fact of which the whole empire was officially informed by the government, about thirty years ago. It was discovered that water had percolated into the mausoleum of Kiaking, having been built too near the mountain-side, the alum cement imbibed moisture, segregated and opened the way for water to enter the tomb. In those peaceful days, such an event was of such importance as to call forth edicts and rescripts, memorials and reports in succession for several months. The son-in-law of the deceased monarch, to whose care the construction of the edifice had been entrusted, was fined and degraded, and a statesman from Foh-Kien, acquainted with the properties of alum, was appointed to remove it a short distance from the mountain.

Alum was first introduced into China from the West, and until a comparatively recent period, the best kind, called sometimes Persian, and at others, Roman alum, was brought from Western Asia. Numerous localities, where an inferior article is manufactured, are mentioned in the Pharmacopœia, viz., Shan-tung, Shan-se, Kiangsu, Hu-kwang, Sz'-chuen, also in the south-western frontier and in Tibet. That from Sz'-chuen is represented as having the property of converting iron into copper, or of coating

\* Dr. Macgowan's Chinese Serial (published at Ningpo,) quoted in the North China Herald, Feb. 23, 1856.

iron with copper, by placing the former metal in a solution of rice-liquor and alum, the stone of that province. The most recent editions of works on *Materia Medica* contain no reference to the mines in this province, the products of which have surpassed in quality the foreign, and rendered its importation unnecessary. From this, and from other circumstances, it is certain that the works, which we will not describe, have not been long in operation. There are in the Sung-yang hills, bordering on Foh-Kein, in the district of Ping-yang, Wau-chau prefecture, and in close proximity to Peh-kwan harbour ( $27^{\circ} 9' 10''$  N.,  $130^{\circ} 32' 6''$  E.)

The locality has been visited by one foreigner only, to whom we are indebted for most of the following particulars. About two months ago he started from Chih-ki, bight in Lannai harbor to which Ningpo boats resort for this commodity to the northward of Peh-kwan. Three hours' hard walking over a succession of precipitous hills crossed by stone steps and pathways, brought him to the mines. Ten alum-making establishments were in operation, which, with the exception of one on a hill opposite, occupied about a mile of the side of a lofty hill. They were adjacent to the quarries, from which the alum stone seemed to crop out of decomposed rock of the same lithological character. The stones were thrown into a fire of brushwood, where they burnt with a slight lambent flame, and as they cracked, the fragments were taken out, broken into small pieces, and macerated in vats. Subsequently the disintegrated mineral was thrown with water into a vessel having an iron bottom, and sides of wood, and boiled for a short time. The lixivium was then poured into large reservoirs, where it crystallized into a solid mass. Blocks of alum weighing about fifty catties each were hewn out of the reservoir, and carried in this state in bamboo frames, one on each end of a porter's pole to the place of shipment, where it is broken into fragments. When not designed for immediate exportation, the blocks are stored away for drying. On reaching the depot, the alum is found charged with a double quantity of moisture, the porters being obliged to deliver a certain weight, they slip their burdens in the mountain streams which they pass in their journey. Judging from the number of laborers engaged in transporting the mineral on the day of our informant's visit, the quantity brought from the works could not be less than eighteen tons. The quantity consumed by the dyers of Ningpo prefecture alone, being nearly 22 tons per annum, is corroborative of this estimate. The supply is literally inexhaustible. Five dollars and a quarter a ton at the landing, would afford the manufacturer a fair profit. It often fetches much more, as there has been an increasing demand for the article, owing to the greater facilities afforded for exportation from Ningpo in foreign vessels.

The Wan-chau alum is equal to the best Roman,—a roseate tint in some specimens, indicate the presence of minute quantities of iron.

We have no means of ascertaining the precise geological position of the rock from which this alum is procured; some circumstances seem to indicate it to be a new mineral. It is stated that no potash nor any other ma



terial is employed in the works. Granitic and porphyritic rocks abound in the vicinity, and some parts of the district produce iron and silver. According to the Wan-chau topography, the working of silver was discontinued in the reign of Wan-lih, (1615,) in consequence of imperial prohibition. This part of the coast has recently become the seat of poppy cultivation for the bane of the Chinese race.

As a contribution to the physical description of the alum district, we would add that the typhoon of September last was preceded by a rising of water in wells and ponds many miles inland. When the cyclone reached the coast, it submerged about a hundred square miles, occasioning a vast destruction of life and property. The waters of the sea were retained in the country by strong easterly winds for several days, leaving a strip of land bordering on the sea quite dry.—*London Pharm. Journal*, July 1856.

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*Dr. Boucherie's Patent Process for Preserving Wood from Decay.*—This patent is for an important improvement in the process of preparing timber, so as to preserve it from decay.

It is the invention of the eminent French chemist, Dr. Boucherie, who has devoted nearly twenty years in bringing it to perfection.

The system of Dr. Boucherie accomplishes two objects:—first, that of expelling the sap; and, secondly, filling the pores of the timber with a preservative solution.

The manner in which this is effected is by applying the preserving fluid under pressure, so as to cause it to pass longitudinally along the fibres. The preserving fluid thus forces the sap out before it, and occupies its place.

The advantages which would result from expelling the sap, and replacing it with an antiseptic fluid, have been long known, and the idea of effecting it by applying the fluid under pressure at the end of a piece of timber is not new, having been suggested and patented many years ago by Mr. Bethel. But the means then used did not accomplish the object in such a manner as to admit of its commercial application.

Hence the more expensive process of creosoting has been adopted—where the timber is totally immersed in the oil under pressure—which does not permit the sap to escape.

Dr. Boucherie's process has been attended with complete success. The apparatus employed, is of a very inexpensive character, and may be erected in a few days; it is capable of application on the most extended scale; and it is, in fact, very extensively employed at this time in preparing sleepers and telegraph posts for the French railways.

When the timber is under operation, the sap runs out from the ends in a clear stream, showing the amazing quantity of this fluid which is contained, and exhibiting the tubular structure of the wood, in the most striking manner; in fact, the preserving fluid will traverse a tree twelve feet in

length, with less pressure than is required to force it laterally through a plank three-quarters of an inch in thickness. When the sap is forced out the preservative fluid follows it, and its presence at the ends of the wood is ascertained by a chemical test.

Thus the sap and fermenting juices become completely expelled, and the timber becomes saturated throughout its length with the preserving fluid.

Important advantages arise in the employment of this process in this country. First, it may be applied successfully to Scotch fir, beech, elm, and other home-grown timber; secondly, it is not necessary that the wood should be dried or seasoned before being prepared, but, on the contrary, the operation is best effected within a few weeks after the tree has been cut down; thirdly, any cheap antiseptic fluids, such as solutions of sulphate of copper, or chloride of zinc, become perfect preservatives when applied in this manner; and, fourthly, no heat is required, and the wood is not rendered inflammable.

The result is a saving in first cost of about one shilling per sleeper as compared with Baltic timber creosoted; while the durability thus attained has been fully ascertained by the extensive trials already made in France, which will be further described.

*Success of the System in France.*—The first report upon this process was made in the year 1841, by a committee of the French Academy of Science, M. Arago being chairman, upon the occasion of a pamphlet on the subject by Dr. Boucherie being read before that distinguished body, and which was consequently ordered to be inserted in the "*Recueil des Savants Etrangers*," and copies to be forwarded to the Ministers of Agriculture, Commerce, Public Works, Marine, Finance, and War.

In the year 1850, the French government appointed a commission of distinguished engineers of the Points et Chaussees, and again in 1852, the principal officers of Genise, to minutely investigate and report upon the merits of this invention, and which they accordingly did; the reports on both occasions being favorable to Dr. Boucherie's invention; while, at the close of the recent Exposition, the French government marked its sense of the public benefit derivable from it by awarding to its inventor, the rare distinction of the large gold medal of honor, of which there were only four conferred on the representatives of the whole of France.

*Duration of Sleepers prepared by this Process.*—In the year 1846, 80,000 sleepers thus prepared, were authorized to be laid down upon the Northern Railway of France, together with a certain quantity of unprepared sleepers.

In this instance, the Company chose wood that decays easily, and which, on that account, had been rejected for durable works. They employed beech, pine, alder, elm, and birch.

These sleepers were inspected every year, and each time were found in a perfect state of preservation. In May, 1855, Dr. Boucherie being desirous of exhibiting in the Exposition some wood prepared by this process, had a few of each kind of these sleepers taken up, and they were found in every

instance to be in as perfect a state as when first laid down; the bark was unaltered, exhibiting two letters, the initial mark of the contractor, as clear and visible as when first impressed, while those sleepers which had been laid down unprepared had long since been reduced to decay. Upon these results being established, the greatest French Railway Companies, such as the Northern, Eastern, Nantes, &c., came forward, and required the immediate application of this process to the timber used upon their lines.

The following is an extract of a report upon the subject addressed to the jury of the late Exposition, by the administrators of the Northern Railway of France :—

“The sleepers prepared by Dr. Boucherie’s process are preserved in an absolute manner, it being impossible to foresee a limit to their duration, seeing the present perfect state of preservation exhibited by those sleepers laid down eight years ago. The Northern Railway Company has adopted this process in preference to all others.

“Since the year 1853, the Northern Company has ordered more than 300,000 sleepers prepared by this system, and further orders would have been given, if they had found contractors disposed to deliver upon the same terms; however, at the present time tenders are required for more than 200,000 of those sleepers.”—September, 1853.

*Telegraph Posts.*—The principle, as applied to the use of telegraphic posts, has been attended with equally favorable results, both as regards durability and economy. In the year 1846, the French Government substituted white pine posts prepared by this process, for the usual oak posts, for telegraphic wires on the Rouen line, and they are at the present time in as perfect a condition as when first erected.

This proves, and it is of importance to know, that timber thus prepared is equally efficacious when buried in dry or damp earth, and this is also exemplified daily by the telegraphic posts placed all over the French territory. Mr. Alexander, inspector of telegraphic lines in France, officially reported the costs of the two kinds of posts employed on that line as follows ;—

| Prepared pine telegraph posts.          | Unprepared oak telegraph posts. |
|-----------------------------------------|---------------------------------|
| Feet.                                   |                                 |
| Ordinary posts $5\frac{1}{2}$ (4s. 5d.) | against 16fr. (12s. 9d.)        |
| Winding posts 9 (7s. 3d.)               | “ 40fr. (£1 12s.)               |
| Crossing posts 16 (12s. 0d.)            | “ 70fr. (£2 16s.)               |

The following letter on the subject is from the administration of telegraphic lines in France :—

“Paris, August 14, 1855.

“Sir,—All the telegraph posts in the French Empire have been prepared by your process.

“The administration had 200,000 on the 1st of January last, and since that time have caused 32,000 additional posts to be prepared.

“The preservation of the posts thus injected with sulphate of copper is

rendered complete, although the first were prepared and laid down in the year 1846.

"It is with pleasure, doctor, that I am enabled to give you this information, in order that you may communicate it to the members of the jury of the Universal Exposition.

(Signed,)

"H. DE VOUGY,

"Chief Administrator of Telegraph Lines, Minister of the Interior."

"TO DR. BOUCHERIE."

*Journal of Franklin Institute, and Herapath's Journal.*

*On Soft Sulphur.* By E. BAUDRIMONT.—When fresh soft sulphur is brought in contact with essence of turpentine in a closed tube, and left to itself for five or six days, the fragments of sulphur become opaque, and covered with a great number of small, transparent, and brilliant crystals, which also clothe the walls of the tube. In a few months these crystals acquire a considerable size, which they do not afterwards appear to exceed. They are modifications of the symmetrical octohedron, which is always obtained when sulphur is crystallized at the ordinary temperature. As this crystallization takes place at the surface of the sulphur, and not in its mass, it cannot be attributed to a direct conversion of the soft sulphur into octohedric sulphur, but rather to the greater solubility of the former in turpentine and its return to the latter condition in this fluid, which would necessitate the precipitation of a portion of the body dissolved in the turpentine.

The author found that at 59° F. the same quantity of turpentine dissolved in twenty-four hours 1000 parts of ordinary sulphur and 162 parts of soft sulphur. At 212° F. the soft sulphur appears to become converted into ordinary sulphur; and soft sulphur appears to possess different degrees of solubility, according as it was exposed to different temperatures, and as it was more or less fresh.—*Chem. Gaz. June 1, from Comptes Rendus, April 28, 1856.*

*On the Bichromate of Potash and Sulphur Acid Test for Strychnine.* By C. W. BINGLEY, Ph.D., F.C.S.—When strychnine in powder is moistened with a single drop of undiluted sulphuric acid, and a small fragment of bichromate of potash is placed in the liquid, a beautiful and most intense violet tint immediately appears at the points of contact, and is speedily diffused over the whole liquid, disappearing entirely in a few minutes (*vide Chem. Gaz.*, vol. x. p. 198, and *Ib.*, vol. v. p. 15), leaving the liquid colored a deep yellow-orange color by the bichromate of potash.

But if a considerable portion of tartarized antimony be present in solution, along with a small portion of strychnine either in solution or in powder, the violet tint is not produced, as in the case before alluded to, but a pale greenish color, which is much more persistent, is apparent.

With the chloride of antimony, the presence of strychnine, even in a large quantity, fails entirely in producing the violet tint with the addition of sulphuric acid and bichromate of potash.—*Chem. Gaz.* June 16, 1856.

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*Determination of Butter in Milk.* By M. MARCHAND.—Marchand's lactobutyrometer consists of a straight glass tube as the vessel of reception, which terminates in a narrower glass tube closed on one side. Up to 19.20ths of its contents it is divided into 3 equal parts, of which that nearest the opening again has its three upper tenths divided into 100 parts, 10 of which are carried on beneath the line of demarcation.

For use, the first division is filled with milk, to every 10 cub. centims. of which a drop of caustic soda is added; this is covered with the same volume of ether, the two fluids are thoroughly mixed together, and the last division is then filled with alcohol of spec. grav. 0.864 to 0.833°, and the whole well shaken together. The instrument is then immersed in a water-bath of 109°·4 F., and left there in a vertical position until the temperature of the water-bath has fallen to 86° F. The volume of fat which has separated on the surface is determined by reading off the degrees which it occupies from above downwards to the lowest level of the meniscus. The corresponding weight of butter for each kilogramme is found in a table.—*Chem. Gaz.* July 1, from *Journ. de Chim. Méd.* Nov. 1856.

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*On the Prevention of the Oxidation of Metals.* By H. DRAPER.—Those familiar with electrical science are well acquainted with the fact that zinc exercises positive relations with regard to most other metals. In other words, it possesses the power of keeping them in a negative state when in contact with them.

In this negative state they are incapable of entering into combination with oxygen, and this circumstance may be applied with much advantage to the prevention of the oxidation of machinery, especially such parts of it as, in the case of marine engines, are liable to come in contact with water. Many instances will at once suggest themselves in which much manual labor might be saved by the simple contrivance of appending either a ring or slip of zinc to the metal to be preserved bright. It would be especially applicable in the case of bayonets and rifle barrels, and a zinc edging to a scabbard would prevent the rusting of the sword.

I have employed this method for some years with perfect success in the case of articles of polished steel, which, for the sake of experiment, were placed in precisely similar circumstances with others not so protected, and retained their brilliancy, while the others became rapidly covered with a thick coating of oxide. The useful properties of "galvanized iron," not improperly so called, are due to the same cause.—*London Pharm. Journal.*

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*The natural state of Hippuric Acid.*—So great differences exist in regard to the proportions of hippuric acid contained in the normal state in the

urine of the horse, that a chemist, M. Roussin, has undertaken to find out whether these differences are those of calculation or are really well founded. After numerous determinations, he has recognized the fact that the proportions of hippuric acid vary like the urea according as the horse is at work or rest. The following table contains the results of the trials. The urea has been determined in the condition of dry nitrate.

|                                         | Hippuric acid<br>in 1 litre. | Nitrate of urea<br>in 1 litre. |
|-----------------------------------------|------------------------------|--------------------------------|
| 1. Omnibus horses, . . . .              | 7.8 grammes                  |                                |
| 2. " " at work, ; .                     | 10.0                         | 18 grammes                     |
| 3. Arabian stallions, completely quiet, | 0.0                          | 32 "                           |
| 4. " " " "                              | 0.0                          | 35 "                           |
| 5. " " " "                              | 0.0                          | 33 "                           |
| 6. " " " "                              | 0.0                          | 34 "                           |
| 7. " horses at work, . . .              | 5.0                          | 21 "                           |
| 8. " horses fatigued by a long course,  | 13.0                         | 12 "                           |
| 9. " horse after a very long course,    | 14.0                         | 15 "                           |

Hence it is clear that horses fatigued produce much hippuric acid and comparatively little urea. Horses well fed and quiet produce little or no hippuric acid. Urea on the contrary is found in their urine in very large proportions. Its limpidity may be the index. If the liquid is clear and deposits little carbonate of lime, it has much urea and little hippuric acid; if it is muddy, it is certain that there is much hippuric acid. Respiratory activity and the employment of muscular force accordingly seem to transform urea into hippuric acid. Rest, on the contrary, leaves the urea intact, and does not appear to favor its transformation into hippuric acid.—*American Journal of Science and Arts.*

*Dr. McIntire's Anti-Dyspeptic Pill.*—We perceive that the formula for the above pill, published in our last No., is rendered by some typographical errors entirely unintelligible. It should be as follows:  $\mathcal{R}$  Potass. sulph.  $\mathfrak{z}\text{ij}$ ; Cubeb. pulv.  $\mathfrak{z}\text{j}$ ; Ginger. pulv., Rhei pulv. a a  $\mathfrak{z}\text{ss}$ ; Ol. Gaultheria gtt.  $\text{xx}$ ; Mucillag. Acac. q. s.; M. Ft. Pill No. Lxx. Dose:—one before each meal.—*New Hampshire Jour. of Med.*

*The Adhesive Iodine Paint.*—The following is the formula for preparing an iodine paint, which is made adhesive by the addition of mastic, and is thus prevented from spreading too much when applied to the skin. As the value of this application in chronic inflammations of the eyelids is becoming recognized, it is evidently important that we should be enabled to apply the paint so as to prevent its spreading on the more delicate structures in the neighborhood.  $\mathcal{R}$  Spirits vin. rect.  $\mathfrak{z}\text{ij}$ ; spirits. æth. nitr.  $\mathfrak{z}\text{iv}$ ; mastic,  $\mathfrak{z}\text{ss}$ ; iodinii ad sat. This is the preparation used at the Moorfields ophthalmic hospital with great success as a counter-irritant.—*Virginia Medical Journal.*

## NOTICE

*To the Pharmacutists and Druggists of the United States.*

## AMERICAN PHARMACEUTICAL ASSOCIATION.

The third Article, 1st Section of the Constitution, requires the President, at least three months previous to the annual meeting, to publish a call in such Journals as he may select, stating therein the object of the Association and the conditions of membership. In compliance with this duty, you are hereby notified that the next Annual Meeting of the Association will convene in the city of Baltimore on the second Tuesday, (the 9th) of September, at 3 o'clock, P. M.\*

The objects of the Association are to deliberate on the condition of our profession, the advancement of pharmaceutical knowledge, and the elevation of the professional character of Druggists throughout the United States. The following extracts from the Constitution exhibit the Conditions of Membership.

*Conditions of Membership.*

SECTION 1. Every apothecary and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, who, after duly considering the objects of this Association, and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

SECTION 2. The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said committee. If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot. Should an application occur in the recess, the members of the committee may give the approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

SECTION 4. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution. Members shall be entitled, on the payment of five dollars, to receive a certificate of membership signed by the President, one Vice President and the Secretary, covenanting in writing to return the same to the proper officers on relinquishing their connection with the Association.

SECTION 5. Every local Pharmaceutical Association shall be entitled to five delegates.

JOHN MEAKIM, President.

*New York, April, 1856.*

\*[The place of meeting is the Hall of the Baltimore College of Dental Surgery, corner of Hanover and Lombard streets, Baltimore.—EDITOR.]

## Editorial Department.

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AMMONIO-FERRIC ALUM.—The following addition to the paper of our valued contributor, at page 305 of the July number, arrived too late for insertion among the original communications, and as it adds to the value of that paper, we have preferred to place it here rather than postpone its publication till November.

### *Addendum on Ammonio-Ferric Alum.*

By W. HODGSON, JR.

From want of time to satisfy myself in regard to some of the details, I omitted in my paper on the above article, in the last number of the American Journal of Pharmacy, to state certain precautions which are important in the preparation of that substance, in order to obtain an elegant salt. The excessive heat of the present summer for several weeks prevented spontaneous crystallization, the thermometer during that time ranging from 80° to 103° Fahrenheit, whereas it appears that the ammonio-ferric alum will not spontaneously part with its mother water and assume the crystalline form under ordinary states of the atmosphere, with the temperature over 80°. If artificial heat is applied, beyond a certain point of concentration, the salt falls down in a granular form very difficult of solution, and probably anhydrous, or nearly so, instead of having twenty-four atoms of water of crystallization. Again, if subjected to the direct rays of a hot sun, a change takes place which gives the crystals a very dark brown orange color, evidently from free oxide of iron. The solutions should, in order to avoid the tendency to develop free oxide of iron, be rendered acid by addition of a little sulphuric acid. The crystals first formed should be redissolved in an equal weight of hot water thus slightly acidified, and then set aside for spontaneous evaporation in a cool shady place with a current of air. They must be washed with cold acidified water, and pressed in bibulous paper, or something similar thereto. They are then of an elegant violet tint, and of a more or less regular octohedral form. In order to preserve this appearance (as they readily change by exposure to moisture and warmth) they should be kept bottled up.

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AMERICAN PHARMACEUTICAL ASSOCIATION.—We take the opportunity which now offers immediately before the MEETING of this body, to again call the attention of members and others to the fact, and urge the acceptance of the invitation to attend it which has been extended officially by the President and Executive Committee to all respectable members of the Pharma-



ceutical body. It was the design of the founders of this Association, that it should gradually grow in numbers and influence until its action would be received as a fair exponent of the sentiments and wishes of the best educated portion of the profession, in reference to the reforms which might be needed. Hence it has been the constant aim of those having the management of its affairs to enlist the interest of pharmacutists in every section of the union in its favor, so that their support and services may be available in the furtherance of its objects. Let us give an example, supposing the Association has extended its membership into every State. The time is approaching when the next decennial revision of the Pharmacopœia is to occur. The bodies represented in the Pharmacopœia convention are requested to prepare and forward such notes of revision of that work as they deem proper. One of the chief merits of a United States Pharmacopœia is, that it should embody a list of materia medica and medicinal preparations suited to the wants of every section of a country that embraces all climates from tropical to arctic. Now we contend that intelligent pharmacutists, in the pursuit of their practice in the service of physicians, get a better idea of the wants of the medical profession than physicians themselves, as they are called on to supply those wants. Hence, if the Association should bring to bear its influence on this subject, it is presumed that a body of information could be collected that would very materially aid the Committee of Revision. It is in this way that the Pharmaceutical Society of Great Britain has been successful in promoting reforms. Its members extend throughout England and Scotland, and it is at this time employing its influence in aid of that noble work, the *fusion* of the three British Pharmacopœias into one great work, to represent the British Empire. Again we say to the brethren, attend the meeting; and to those who cannot come, yet who feel in harmony with the Association, we say join it in membership in the manner explained in the President's notice at page 477, and by thus countenancing it give their indirect aid.

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POISONING—TOXICOLOGY.—The crime of poisoning seems to be on the increase in England since the developments in the case of Palmer, which has become so widely known by his trial and execution. The attention of English pharmacutists has been much attracted towards the chemical means of detecting poisons, and the journals teem with essays on reagents and antidotes. In view of the evils which result from the newspaper publication of the details of these trials being read and pondered on by evil-disposed and morbid-minded persons, who before may have had the half-formed idea of murder or suicide resting with them, druggists and apothecaries should be doubly careful in dispensing poisons of all kinds, and especially those potent agents like strychnia which are so easily abused. In the absence of legal enactments, it is to be hoped that their necessity will be superseded by a self-imposed carefulness in the vending of this class of

substances. It is also greatly to be desired that Pharmaceutists should give some attention to the detection of poisons, and familiarize themselves with antidotes, so as to render useful aid when called upon in emergencies.

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*Hints on Various Subjects connected with our Business.* By A. I. MATHEWS & Co., Druggists and Pharmaciens. Buffalo. pp. 150. 12mo. 1856.

We have been amused as well as instructed in looking over this evidence of the enterprise of our friends Mathews & Co. who in issuing this little volume say, "It is to be presumed that we do not go to the trouble and expense incident to such a volume as this without some hope of remuneration in one form or another. We do *not* present this book to our patrons as an offering from an unmixed and entirely unselfish friendship. In fact we hope to 'make money' by it, in the same way we have practised heretofore, and found advantageous to both parties concerned."

The book commences with a history of the business stand of the firm, from the time it was burnt by the British in 1814 with the rest of Buffalo village to the present, with a description of the establishment as it now is, and its dispensing arrangements. Then follows an account of wines, liquors, perfumery, soaps, glass ware, brushes, spices, effervescing and other medicated waters, flavoring extracts, dietetic articles, etc. etc., concluding with the reasons of the firm for *not selling patent medicines*. The whole affair is so well "gotten up," is so full of useful hints and quaint humor, and evidences so much enterprize, that in spite of a little admixture of humbug we cannot but admire the tact manifested in the publication.

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*Charter, Laws, and Code of Ethics of the Philadelphia College of Pharmacy, with Lists of Officers, Members and Graduates, and the Announcement of the School of Pharmacy, &c.* Philadelphia, 1856. pp. 28, octavo.

The members of the College are advised of the issue of a new pamphlet of By-Laws, etc., and those who may not receive it, will be supplied by application to the Secretary.

THE  
AMERICAN JOURNAL OF PHARMACY.

~~~~~  
NOVEMBER, 1856.  
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PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL  
ASSOCIATION.

THE American Pharmaceutical Association, pursuant to notice, met in the city of Baltimore, September 9th, 1856, at 3 o'clock, P. M., in the Hall of the College of Dental Surgery.

The meeting was called to order by the President, John Meakim, of New York, W. J. M. Gordon, of Cincinnati, Secretary.

On motion, the President appointed Edward Parrish, of Philadelphia, Edward S. Wayne, of Cincinnati, and Eugene Dupuy, of New York, as a Committee on credentials, who after a recess reported the following list of delegates, viz:

*Massachusetts College of Pharmacy*—Charles T. Carney, A. P. Melzar, R. R. Kent, and Charles H. Atwood.

*New York College of Pharmacy*—John Meakim, Eugene Dupuy, H. J. Kiersted, and C. B. Guthrie.

*Philadelphia College of Pharmacy*—Charles Ellis, Henry C. Blair, William Procter, Jr., S. S. Garrigues, and Fred. L. John.

*Cincinnati College of Pharmacy*—A. M. Stevens, J. W. Hannaford, W. J. M. Gordon, and Edward S. Wayne.

*Maryland College of Pharmacy*—George W. Andrews, Charles Caspari, Israel J. Grahame, J. Jacob Smith, and J. F. Moore.

*Apothecaries' Association of the District of Columbia*—V. Harbaugh, John L. Kidwell, John W. Nairn, Francis S. Walsh, and W. H. Gilman.

On motion, the section relative to electing members by ballot

was suspended, and the following gentlemen, having been recommended by the Executive Committee, were elected, viz :

|                              |                        |                   |
|------------------------------|------------------------|-------------------|
| Edward C. Gilpin, Baltimore, | William Caspari,       | Baltimore,        |
| Joseph Roberts,              | “ Oscar Monserrat,     | “                 |
| John W. Barry,               | “ Wm. S. Thompson,     | “                 |
| Charles Wiseman,             | “ L. Phillips,         | “                 |
| George J. Fetter,            | “ R. H. Dryden,        | “                 |
| J. B. Baxley,                | “ Frederick Thompson,  | N. York,          |
| James Balmer,                | “ John M. Maisch,      | Philadelphia,     |
| J. H. Lemmon,                | “ William Heyser, Jr., | Chambers-         |
| William Reed,                | “                      | burg, Pa.         |
| James W. Bowers,             | “ H. A. Blauw,         | Rochester, N. Y.  |
| Samuel McPherson,            | “ James Walsh,         | Washington, D. C. |

The Secretary called the roll, and recorded those present.

On motion, a nominating committee was appointed. Each delegation named one of its members, and the president appointed two from the non-delegated members present, to nominate officers for the ensuing year, and report at the next sitting. They are as follows :

C. B. Guthrie, of New York College; Edward Parrish, of Philadelphia College; E. S. Wayne, of Cincinnati College; J. F. Moore, from the Maryland College; and F. Stearns, of Detroit, and A. P. Sharp, of Baltimore, from the non-delegated members.

[The delegations from Massachusetts and the District of Columbia did not arrive in time for the first sitting, but subsequently appointed members to act with the committee.—EDITOR.]

The report of the Treasurer, J. S. Aspinwall, of New York, was read by C. B. Guthrie, and with his vouchers was referred to G. W. Andrews, of Baltimore, and H. T. Kiersted, of New York, to audit.

The report of the Executive Committee, Messrs. Coggeshall, Mathews and Procter, was read by William Procter, Jr., accepted, and laid on the table for future action.

[The following is an abstract of this report :

The Proceedings of the Meeting in New York in 1855, were published in a pamphlet of 40 pages; one thousand copies were printed and distributed at an expense of eighty-three dollars.

In the interim since last meeting, the following gentlemen were admitted into the Association through the action of this committee, viz:

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| Alvah Littlefield, of Boston, Mass. | H. J. Macdonald, of Barnwell Court-house, S. C. |
| Augustus P. Melzar, " "             |                                                 |
| Charles P. Tufts, Dover, N. H.      | Robert Battey, Rome, Ga.                        |
| H. C. Blair, Philadelphia, Pa.      | Felix Glackmeyer, Montgomery, Ala.              |
| Thomas Weaver, " "                  | Joseph A. Lee, Louisiana                        |
| John H. Ecky, " "                   | Guilford T. Chamberlain, St. Louis, Missouri    |
| M. Henry Kollock, " "               |                                                 |
| Charles Bannvart, Harrisburg, Pa.   | John A. Child, Madison, Indiana                 |
| T. Roberts Baker, Richmond, Va.     | J. C. Parr, Cincinnati, Ohio                    |
| John Thomson, Sumpter, S. C.        | Paul Reinlein, " "                              |
|                                     | J. W. Dietrich, Dayton, Ohio.                   |

The duty of issuing circulars of invitation to the Druggists and Pharmacutists of the United States was duly executed.

The Committee offer the following suggestions, viz:

1st. That the plan of offering prizes be abandoned, as hitherto it has failed in enlisting the talents of Pharmaceutists; in lieu of which it is recommended that the Association, at its annual meetings, distribute subjects to individual members for investigation, to be reported on at the next meeting. Should any one of them merit the particular approbation of the members, it may, on resolution, supported by two-thirds of those present, receive a reward to be designated in the resolution.

2d. It is recommended that due care should be observed in selecting members whose interest in the subjects will induce the requisite attention, so that an interesting series of reports may be confidently anticipated.

3d. When desirable, a subject may be submitted to two or more members, but individual responsibility is deemed most productive.

4th. The Committee submitted a list of subjects as an example of what they intend, but desire that it will not prevent members from suggesting others that may be more important and useful. (See page 494 for this list, with the names of members who have agreed to investigate them.

5th. Proposes a form or blank to be used by the Executive Committee in the admission of members, which the candidates shall be required to sign. (See page 494.)

6th. Recommends the price of the Certificate to be fixed at three dollars.

7th. Proposes the appointment of a Committee to report to the next annual meeting, on the manner in which the Association may most efficiently contribute its aid in the revision of the U. S. Pharmacopœia at the next decennial period, 1860.]

The report of the Committee on the Certificate of Membership, Messrs. Ellis, Procter, Meakim, and Laidley, was read by the Chairman, and a copy of the new certificate exhibited. The report was accepted, and on motion of C. B. Guthrie, a

vote of thanks was tendered to the Committee for the able manner in which they have executed their trust.

[From this report we learn that the design of the Certificate originated with the Committee, but they acknowledge valuable aid from Robert Coulton Davis, of Philadelphia, in perfecting its details preparatory to its submission to the artist. A description of the picture will be found at page 187 of this volume. The expenses incurred by the Committee amount to \$122 25, and their receipts from fifty-seven members, who have taken the certificate, to \$171.]

The Committee on standards of quality for Drug Examiners, Messrs. Procter, Coggeshall, Carney, and Wayne, made a report, which was accepted and laid upon the table for future action.

[The Committee endorse their report of last year, and request to be discharged from further service.]

The Committee on Home Adulterations was not yet ready to report.

The report on the Statistics of Pharmacy, referred last year to the Corresponding Secretary, being called for, was read by that officer, together with letters from A. E. Richards, of Plaquemine, Louisiana; Robert Battey, of Rome, Georgia; Guilford T. Chamberlain, of St. Louis, Missouri; A. I. Mathews, of Buffalo, New York; Frederick Stearns, of Detroit, Michigan; and subsequently one from S. M. Colcord, of Boston, Massachusetts, and accepted.

[In the course of his report the Secretary says, "It may not be inappropriate to remark, that in an extensive correspondence with apothecaries and druggists of various sections during the past year, he has been gratified with the increasing improvement in the tone of feeling manifested by the writers, not only as regards the Association and its objects, but in reference to the quality of shop practice. One of the greatest impediments complained of, is the difficulty of obtaining efficient and reliable clerks or assistants, which in not a few instances has prevented valuable members from attending this meeting; and it is believed that in no way can the Association prove of more real service to the pharmaceutical profession, than by measures directed to encourage apprentices and assistants to feel a just pride in qualifying themselves by personal *home* exertions, to become skilful in the practical duties of their business, as well as in gaining a respectable knowledge of its theory by earnest study.]

The Committee on the Revision of the Constitution, Messrs. Parrish, Colcord, and Aspinwall, was read by title and accepted.

On motion of Edward Parrish it was agreed, that the Association on Wednesday morning, at 11½ o'clock, commence the examination of specimens, and the reading of scientific papers.

On motion it was carried, that the next business after the election of officers be the consideration of the new Constitution.

On motion, adjourned to meet at 9 o'clock on Wednesday morning.

[As the room in which the Association convened, which was chosen for its central position, did not prove eligible, the succeeding meetings were held at the Hall of the University of Maryland.—EDITOR.]

*Second Day—Morning Session—Sept. 10th, 1856.*

The Association met at 9 o'clock at the Maryland University. The minutes of the preceding meeting were read, amended, and adopted. The roll was then called, and forty-one members answered to their names.

[Those not before present were S. McPherson, F. S. Walsh, V. Harbaugh, and Wm. H. Gilman, of Washington; J. L. Kidwell, of Georgetown; A. P. Melzar, Charles T. Carney, Charles H. Atwood, and R. R. Kent, of Boston; R. H. Stabler, of Alexandria; A. E. Richards, of Louisiana; Eugene J. F. Russell, Jos. C. Rogers, and G. Davidge Woods, of Baltimore; and James Cooke, of Petersburg, Va.]

The Committee to nominate officers, reported the following nominations, viz:

For *President*—George W. Andrews, of Baltimore, Md.

“ *1st Vice President*—John L. Kidwell, of Georgetown, D. C.

“ *2d* “ “ Frederick Stearns, of Detroit, Mich.

“ *3d* “ “ H. T. Kiersted, of New York city.

“ *Treasurer*—James S. Aspinwall, of New York city.

“ *Recording Secretary*.—W. J. M. Gordon, of Cincinnati, Ohio.

“ *Corresponding Secretary*—William Procter, Jr., of Philadelphia, Pa.

The nominees were separately balloted for and elected.

The delegations from Boston and Washington being now present, the former appointed Charles H. Atwood, and the latter V. Harbaugh, members of the nominating committee, who have further to report ten names for the standing committees.

The President elect was now conducted to the chair by Mr. Meakim, the late president, and in a pertinent speech returned

thanks to the Association, and promised his best exertions for its advancement.

On motion, in order to facilitate the business devolving on the Treasurer, the resolution of yesterday making the consideration of the revised Constitution the first business in order after the election of officers, was suspended to receive the report of the auditing committee, which was read, accepted and approved. When on motion, C. B. Guthrie was appointed Treasurer *pro-tem*.

The following gentlemen, recommended by the Executive Committee, were duly elected members of the Association, viz: H. H. McPherson, Washington, G. Davidge Woods, Baltimore, Eugene J. F. Russel, Baltimore, James C. Rodgers, “  
James Cooke, M.D., Fredericksburg, Va.

The consideration of the revised Constitution was now called up.

On motion, each Article was read and considered separately.

On motion it was carried, after considerable discussion, that the word “apothecary,” wherever it occurs in the printed draft of the Constitution as presented by the Committee, shall read pharmacist.

[There were several advocates of the displaced title, on the ground that it has an American signification, by usage, quite different from that belonging to it in England, and similar to the term “Apotheke” of the Germans; but on the contrary it was argued that as our profession is called Pharmacy, its followers should be called by a name derived from it, and the term pharmacist was considered preferable to the compound name of “Pharmaceutical Chemist,” adopted by the Pharmaceutical Society of Great Britain.—EDITOR.]

After some few amendments, the Constitution as amended was laid on the table, to be engrossed for adoption at a future sitting.

The hour having arrived for reading scientific papers and for examining specimens, the formality of the meeting was suspended, and a table filled with interesting specimens brought in front of the President’s desk.

A paper on the action of Oil of Sassafras upon metallic vessels containing lead, and upon the compound formed thereby, was read by Edward S. Wayne, of Cincinnati, who exhibited a specimen of the oil and the lead compound.

[Mr. Wayne next presented specimens of crude cotton seed, of the seed



deprived of their episperms and ground, of the crude oil by expression and of the oil refined, and more or less decolorized, accompanied by the following verbal remarks, which, at our request, he kindly put upon paper for the readers of the Journal.—EDITOR.]

The manufacture of oil from cotton seed is not a novelty ; a small quantity has been made at the South for some years past ; lately, however, the demand for lubricators has turned the attention of many to cotton seed, (immense quantities of which are allowed to rot, or used only as a manure upon the cotton fields of the South,) as a material from which large quantities of oil might be profitably obtained.

At New Orleans I have been informed that a quantity of this oil has been of late produced, a sample of which I have seen. It was a very bland, light colored oil, said to be made by steaming the seeds and collecting the oil by skimming it from the surface of the water. I cannot vouch for the correctness of the above process.

In Cincinnati some of the oil millers have made the attempt of pressing cotton seed for the oil, but the experiments so far, I believe, have been very unsatisfactory, both in regard to the quality of the oil obtained and in the cost of it.

The oil, to be made profitably, should either be manufactured in the vicinity of the cotton plantation, (as the seeds from the attached fibre are bulky, and the cost of transportation an item,) or the seed should be hulled at the spot and shipped to the place where it is to be pressed in that condition, as it requires three or four bushels of seed in the wool to produce one bushel of hulled seed ready for the mill.

The oil as it runs from the press is of a very dark red color. After standing some time it deposits a portion of the coloring matter, also a portion of a semi-solid fat ; and in cold weather this is deposited to a large extent ; and is only partially taken up upon increase of temperature. The color of the oil obtained by pressure is one great objection to its general use, and is very difficult to remove ; in bleaching it at least ten or fifteen per cent. of the oil is lost, a portion of which may be recovered, and used in the manufacture of soap, for which purpose cotton seed oil is better adapted than for any other purpose. It is a drying oil, consequently not fit for lubricating, and when burnt gives a

smoky flame, and forms rapidly a crust upon the wick. Others say that it answers for both purposes; but all I have met with, upon being used practically for lubricating or burning, gave very unsatisfactory results.

A very good soap is made from it at New Orleans for common purposes; but I think that a soap in every respect equal to the imported Castile could be cheaply made with it.

The dark color of the oil obtained by pressure is due to the presence of a dark resinous substance, presenting itself in small dots throughout the seed. These may readily be seen by examining a section of the seed with a lens, or even the naked eye.

The hull and attached fibre are useful for paper stock; and the cake left after the extraction of the oil is nearly as valuable a food for cattle as that of linseed.

Mr. Wayne also called attention to a sample of the Oil of Pignut Hickory, of which he gave the following account:

The *Caraya porcina*, commonly known as the pignut hickory, is a forest tree of wide range in North America. This tree produces a nut which contains a very oleaginous kernel, between which and the shell, and the lobes of the kernel, a corky matter of a very astringent taste is deposited. The nut in consequence is not edible, but yields by crushing and pressure a light yellow colored oil, possessing a bland, slightly astringent taste; the astringent taste is due to the accidental presence of a trace of the astringent matter mentioned, which might easily be removed, and then it would be equal, for many purposes of the pharmacist, to the best olive oil.

This oil has been for several years past an article of commerce in Ohio, the market value of which ranges from \$1 to \$1.25 per gallon, and the supply of late has not been equal to the demand.

It is very rich in olein, and remains, consequently, fluid at a much lower temperature than most fixed animal and vegetable oils. During the extreme cold of last winter in Cincinnati, where sperm and other oils were in a solid condition, this oil thickened, but could be readily drawn from the vessel containing it.

As a lubricator it is said by those who have used it to be equal to sperm oil, or for the purposes of illuminating not inferior.

The value and extensive demand at present for oils for lubricating and other purposes, should attract attention to the production of oil from this nut, thousands of bushels of which are allowed yearly to fall to the ground and rot, which if collected and the oil extracted, would cut off the necessary importation of a large amount of oils, such as the rape, olive, &c., and pay a handsome remunerative profit to the maker. I have been informed by those who make it in Ohio, that the yield per bushel is one and a half gallons, and that they purchase the nuts, through the country, of the store-keepers for 50 cents the bushel.

Mr. Wayne exhibited nitre earth from the neighborhood of Nashville, Tennessee, which yields 15 per cent of saltpetre, and is said to be in sufficient abundance to supply the demand of the United States.

The same gentleman exhibited paraffine from the cannel coal of Western Virginia, and stated that a ton of the coal, when distilled at a moderate temperature, yielded from 700 to 800 lbs. of liquid products, which by subsequent treatment afforded 50 lbs. of paraffine. Mr. Wayne suggested that paraffine properly purified will answer as a substitute for wax, and that a bland oil may be extracted from the liquid products obtained by superheated steam, so mild in qualities as to be substituted for olive oil and lard in ointments, thus obtaining both wax and oil from coal.

Mr. Dupuy also exhibited specimens of paraffine.

Mr. Wayne presented for examination a specimen of the Mexican soap root, which appears to be a different root from that described by Mr. Simmons (*Amer. Jour. Pharm.* vol. 26, page 482) as so common in California. The most remarkable characteristic of this root is the peculiar spiral arrangement of the fibres of its cortex, which gives to the cylindrical root the appearance of a small bundle of *Para sarsaparilla*. It appears to contain a saponinoid principle. Its infusion froths powerfully by agitation, and is used in Mexico as a substitute for soap.

Mr. Wayne next read a paper on *Leptandra Virginica*, in which he describes a bitter principle upon which the activity of the root depends, and which is quite different from the so-called *Leptandrin* described in the *Eclectic Dispensatory*, see vol. 26, page, 505, of this Journal.

Prof. Guthrie announced the decease of our late member,

William Thomas, in a few appropriate remarks, and offered the following resolution, which was adopted :

“Resolved, That this Association have learned with deep regret the decease of one of their members, William Thomas, of Jersey city, New Jersey, and they hereby tender their condolence to his bereaved family.

The meeting then adjourned to 4 o'clock this afternoon.

*Afternoon Session—Sept. 10th, 1856.*

The meeting was called to order by the President, and the minutes of the morning session were read, corrected, and adopted.

On motion of Edward Parrish, it was Resolved, That the Faculty of the University of Maryland, and of the Maryland College of Pharmacy, be invited to seats in this Convention.

On motion, it was carried that the Association resume the examination of specimens, and the reading of scientific papers at 4½ o'clock.

The report of the Committee on Text-books, (Messrs. Procter, Ellis, and Sharp) was read by the Chairman.

*To the American Pharmaceutical Association.*

The undersigned, a Committee appointed at the last meeting of the Association, to report on the question “What are the best text-books published, for study and reference,” offer the following as their report.

According to Webster, a text-book, in the sense here intended, is “a book containing the leading principles or most important points of a science or branch of learning, arranged in order for the use of students.” The question naturally divides itself into an inquiry relative to books for study, or text-books for the student of Pharmacy, and books for reference, to be used by him, but more frequently by the pharmacist, in the course of his business, to point out the causes of incompatibility in dispensing, or to explain difficulties that arise in the laboratory; and we shall therefore consider them separately.

Of the students of Pharmacy in the United States, of all grades, perhaps nineteen-twentieths never have the advantage of lectures, and are left to feel their way through the treatises on materia medica, chemistry and pharmacy that they may possess, without any systematic arrangement to aid them in appreciating the several subjects. The novice, who takes up the Dispensatory at the beginning, soon becomes interested in the botanical and commercial history and chemical properties of the acacia gums, and suddenly finds himself out of depth in the chapters on acids, involving much chemical technicality; and after these he dips successively into

aconitum, alcohol, aloes and ammonia. The alphabetical arrangement of the Dispensatory is one of its advantages as a book of reference in the course of business, but to the student, without a syllabus to guide him, it is the source of continued annoyance and loss of time. Hence in view of the definition of our great lexicographer, the United States Dispensatory, in its arrangement, can hardly be considered a text book for the pharmaceutical student, unaided by instruction. And yet it is his main dependence, and intrinsically merits all the eulogiums that it has received. As a compendium of materia medica and pharmacy for the use of the physician and apothecary, the United States Dispensatory is so generally reliable, comprehensive, and perspicuous, that no work of the kind in the English language approaches it in usefulness. This has mainly arisen from the authors' just appreciation of the wants of the two classes for whom it was written.

What the *home* student wants to aid him is a syllabus, to be used in connection with the Dispensatory, as a guide book for study, which will take the place of the lecturer, in so far as such a substitute can do it, and it is worthy of consideration whether a suitable committee could not prepare such a work, within moderate limits, that would prove of great service to apprentices and assistants, and be eminently creditable to the Association, under whose auspices it might be published. It would be within the scope of such a work to make constant references to the authors most advantageously to be consulted in the progress of study, without loading it with quotations, and so enable the student to avail himself of the best information at the appropriate moment without waste of time.

Next to the United States Dispensatory we would place the great work of Pereira. As an encyclopedia of materia medica, and especially in the beautiful arrangement in groups according to the natural system of botany, of the large part pertaining to the vegetable kingdom, it is admirably suited to the advanced student. Besides, as the preparations of each drug are described in connection with it, the student also pursues the study of materia medica and pharmacy together, which is the true course when not following separate lecturers. The pharmaceutical part of Pereira's work, however, is not so well suited as that of the United States Dispensatory as a guide to the American student, as the latter is strictly conformed in its nomenclature to the United States Pharmacopœia.

Before materia medica and pharmacy, as exhibited in the Dispensatories, can be properly understood, the student must acquaint himself with the elements of chemistry and botany and with pharmaceutical manipulation. It might at first thought be considered that the manipulations of pharmacy are best learned in the shop and laboratory; but this is true only of those establishments wherein manipulations are carried on to such an extent as to afford an opportunity to the apprentices or assistants to become familiar with them, and when so learned they are most effectually acquired. Unfortunately a very large number of the pharmacutists throughout this country make so few of the nicer chemical and pharmaceutical preparations,

that, unless through books, their pupils know very little of manipulation except that learned at the counter or the mortar stand. Hence the advantage of such works as Mohr and Redwood's Practical Pharmacy, which enter minutely into a description and figuration of apparatus, describing the difficulties that arise in using them, and the means of combating and overcoming these. Of works on pharmaceutical manipulation, strictly speaking, the one alluded to is the best, as it is in fact the only one yet published in English, with the exception of a small book by Dr. Kane, of Dublin, many years ago. To these must be added the volume recently published by Edward Parrish of Philadelphia, on Practical Pharmacy, which is addressed both to the physician and apothecary, and enters to some extent into the manipulations of the laboratory, but chiefly treats of the processes conducted in the shop, and particularly those required in extemporaneous pharmacy. There is so much that is useful to the young pharmacist in this book, and so many valuable hints to those in business, that it should find a place in every shop library.

The study of chemistry is the most important as it is the most difficult of all the collateral branches of a pharmacist's education; the one that gives him the most power when applied in his professional pursuits, and the most reputation among the scientific. Chemistry is indeed the groundwork of every important process, and none can expect to excel who do not make it their study. The student of chemistry should, as early as practicable, get a mental outline grasp (if we may so speak) of the leading principles of the science, to do which it is necessary to select a text-book that presents the subject in a form so compact that the mind can take it in with a reasonable effort. "Fownes' Chemistry for Students" will meet this demand better than larger works, yet the treatises of Grahame, Kane and Turner may be employed when more convenient of access. Of course these remarks apply to the early career of the student; as he progresses, the more extended works will naturally attract attention. The study of analytical and applied chemistry must always *follow*, if pursued at all, the elementary studies above referred to, and embrace a practical knowledge of chemical manipulation. But very few apothecaries have the time or qualifications to become eminent practical chemists, and yet almost every one may become sufficiently familiar with the outlines of analysis to detect adulterations, and with applied chemistry to make many of the nicer chemicals of the shop. We would recommend the little work called "Bowman's Practical Chemistry" to the young apothecary who desires aid in analysis, and to the more advanced, the work of *Heinrich Will*, called "Outlines of Chemical Analysis," translated by Drs. Breed and Steiner. The apothecary with predilections for practical chemistry, will do well to read carefully "Faraday's Chemical Manipulations," or "Morfit's Chemical and Pharmaceutical Manipulations." The latter work is most accessible, and is well illustrated.

Botany, as a distinct study, is rarely pursued by the American pharma-

ceutist; and yet so intimately is it connected with the study of *materia medica*, and the practical distinguishment of organic drugs, that it seems almost unaccountable why it should be neglected. None of the American Schools of Pharmacy have regular courses on botany, so far as we know, yet the rudiments are generally explained by the teachers of *materia medica*. We believe that apothecaries would be the gainers by encouraging their apprentices to cultivate a taste for this science, not only for its intrinsic usefulness, but as affording a mental occupation greatly advantageous to the boys themselves. Gray's, Balfour's or Lindley's "Elements" will be found useful text-books for beginners, and the School Book of Botany by Mrs. Lincoln is also well adapted.

In concluding our task by a catalogue of works of reference for the pharmacist's library, it will require some care to avoid a redundancy. Besides regular treatises on the sciences collateral to Pharmacy, the thoroughly furnished apothecary will require formularies, dictionaries, technologies, etc.

Gmelin's hand book of Chemistry, 12 vols., now publishing by the Cavenish Society.

Regnault's Chemistry, 2 vols.

Lowig's Principles of Organic and Physiological Chemistry.

Gregory's Organic Chemistry, (1856.)

Muspratt's Chemistry of Arts and Manufactures.

Booth's Encyclopedia of Chemistry.

Griffith's Medical Botany.

Pereira's *Materia Medica*.

Dorvault's *L'Officine* (a compendium of information of various kinds that relate to the apothecary business, in French.)

Redwood's Gray's Supplement.

Griffith's Universal Formulary.

Mohr and Redwood's Practical Pharmacy.

Parrish's Practical Pharmacy.

Darby's Translation of Wittstein's Pharmaceutical chemistry.

It was moved and carried that a Committee of three be appointed to recommend a suitable Committee to draft a syllabus for pharmaceutical students, and report at a future sitting of this meeting.

The Chair appointed Wm. Procter, Jr., Charles Ellis, and Edward S. Wayne.

On further discussion this Committee was instructed to act, instead of referring it to another Committee, and the name of Edward Parrish added to their number.

The report of the Committee on prizes was read and accepted.

[This report informed that there had been no prize essays offered.]

The following forms for the signatures of applicants for membership, and for the certificate, as offered by the Executive Committee, were read and adopted, viz. :

I, A—— B——, of D——, approving of the objects of the American Pharmaceutical Association, am desirous of joining it in membership ; and having read its Constitution I hereby signify my approval of it.

(Signed) A—— B——.

I, A—— B——, of D——, hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

(Signed) A—— B——.

The list of subjects for investigation proposed in the fourth recommendation of the Executive Committee's report, (see page 483) was now read, and after some discussion the following resolution was passed, viz. :

It was on motion, Resolved, That the questions embodied in appendix B of the Executive Committee's report be adopted and published in the Proceedings, and that the recommendation of the Committee in regard to their being read and published, and in regard to the award of prizes, be adopted, with the exception of that part providing for their previous reference to a Committee.

[As some doubts existed as to whether the mere publication of these subjects would induce Pharmacutists to take them in hand, the Executive Committee, by application to the members present, succeeded in getting most of them accepted, and in the following list we publish the names of those members who have agreed to act.—EDITOR.]

1st. What are the actual sources of the light Cod-liver oil of American commerce, both as relates to the species of fish that yield it, and the places where it is extracted? Is it adulterated with sperm or fish oil? and if so, is it done by the producers or collectors, or after it enters commerce?

*Accepted by Robert R. Kent, of Boston.*

2d. The substance known in commerce as New England Isinglass, is said to be made from the intestines of the cod fish. Quere, where and by whom is the article of commerce prepared, what process does it undergo, what portions of the fish yield it, and what amount is obtained from a single fish?

*Accepted by Charles T. Carney, of Boston.*



3d. Has Iodine been manufactured in New England from the algaceous plants of that coast; if so, by whom, and to what extent; and what is the relative productive value of the algæ of our own coast, and those of Scotland?

*Suggested to Dr. Henry T. Cummings, of Portland, Me.*

4th. The manufacture of Castor Oil as a branch of American industry. What is the estimated crop of beans for 1856, where grown, and what the amount of oil extracted up to August 1st, 1857? To what uses besides medicine is the oil put, and how far short of the domestic consumption is the production?

*Suggested to Guilford T. Chamberlain, of St. Louis.*

5th. It is said that *Hyoscyamus niger* has become naturalized in some parts of Michigan, in the neighborhood of Detroit. How does the medicinal power of this native grown plant compare with that of the best European grown drug?

*Accepted by Frederick Stearns, of Detroit.*

6th. What is the actual state of the production of volatile oils in the United States, and more especially in Ohio, New York, and New Jersey, as regards quantity, quality, and locality, together with remarks on the trade in volatile oils generally; their adulterations, tests, &c.?

*Accepted by Edward S. Wayne, of Cincinnati, Ohio.*

7th. What measures, if any, have been taken to introduce the culture of liquorice root into the United States, and to what extent have they succeeded?

*Suggested to Joseph Laidley, of Richmond, Va.*

8th. Prof. Calvert, of Manchester, England, has asserted that the article known as "American lard" in the English market, is sometimes found adulterated to a considerable extent with the pulp of potatoes, or other starchy matter. Quere, has this adulteration been noticed in the commerce of this country; if so, how is it most easily detected by chemical or other means?

*Accepted by Israel J. Grahame, of Baltimore, Md.*

9th. Arnica flowers are largely used in the United States. Has any attempt been made to cultivate the plant in New York, New England, or other parts of this country by the Shakers or others?

10th. The medicinal powers of *Cimicifuga* are generally admitted, its use is increasing, it belongs to a natural family, (*Ranunculaceæ*) embracing many active plants containing alkaloids, and yet the attempts hitherto made have not educed any distinct active principle. Quere, to what distinct principle, if any, is the medicinal power of *Cimicifuga* to be attributed?

*Accepted by Edward S. Wayne, of Cincinnati.*

11th. It has become proverbial that *Digitalis* of American growth has not the same amount of sedative power as the European leaf. Quere, does American *Digitalis* yield a less proportion of digitalin than the imported, and is such digitalin equally active with that of foreign origin?

*Accepted by Edward S. Wayne, of Cincinnati.*

12th. The *Elatarium* plant grows readily in Philadelphia. Can it be availably cultivated with a view to the extraction of its peculiar product; and does the *elaterium* it yields compare favorably with the English drug?

*Accepted by Edward Parrish, of Philadelphia.*

13th. According to the most recent researches on ergot by Winckler, (*Amer. Jour. Pharm.* vol. xxiv. p. 346) that chemist obtained an alkaloid from it, which he calls *secalin*, and which he believes to be analogous if not identical with propylamin, the odorous principle of herring pickle. It is desired that the questions be determined: 1st. Whether the volatile alkaloid of ergot possesses the utero-stimulant power of the drug itself. 2d. Whether propylamin, as obtainable from herring pickle, and from narcotin, possesses the same power as *secalin*; and 3d. In view of the result, what is the best formula for preparing a permanent fluid preparation of ergot that will *fully* represent the drug?

*Accepted by William Procter, Jr., of Philadelphia.*

14th. What is the correct history of the production of hemlock or Canada pitch, U. S. P., where chiefly produced, how extracted, and is it obtained by incision; also where is the commercial oil of hemlock produced; is it the oil of the leaves, and what is the proportion yielded?

*Accepted by Charles T. Carney, of Boston.*

15th. On what proximate principle does the anthelmintic power of spigelia depend, is it volatile, and is the odor of the drug a good criterion of its quality; is said principle soluble in water; and what effect have the carbonated alkalies upon it?

*Accepted by Richard H. Stabler, M. D., Alexandria, Va.*

16th. Dr. Wright, of Kentucky, has recently recommended the bark of Liquidambar styraciflua, as a remedy in diarrhœa and dysentery, made into a syrup with cold water, (see Amer. Jour. Pharm. vol. xxviii, Sept.) He likewise states that the resinous exudation which this tree produces at the South, is obtainable by incision from the tree in the States bordering on the Ohio, and that the Kentucky product contains benzoic acid and styracin. It is desirable to have the latter statement corroborated; and if verified, the percentage of benzoic acid that it will yield, and the practicability of obtaining it, as an article of commerce?

*Accepted by Valentine Harbaugh, of Washington, D. C.*

17th. To what extent is the fecula of the Maranta arundinacea produced in the States of Georgia and Florida, and what impediments prevent its being made to rival that of Bermuda, in beauty and excellence?

*Suggested to Robert Battey, of Rome, Georgia.*

18th. What are the most approved methods of rendering medicines palatable to the taste and pleasing to the eye?

*Accepted by Frederick Stearns, of Detroit.*

19th. What are the present sources of senega, serpentaria, spigelia, and other prominent American roots, etc., as supplied in commerce?

*Accepted by Prof. C. B. Guthrie, of New York.*

The period for scientific communications having arrived, S. S. Garrigues directed the attention of the members to a variety of specimens on the table; among them were *pingwar-at-zumbi* a species of lichen from Japan, used as a means of stopping hæmorrhage; a fine specimen of hippuric acid, a variety of specimens of the cobalt-ammonia series of Professors Genth and Gibbs, and several other substances.

Mr. Garrigues also read a critical paper on the narcotic vege-

table extracts, with an account of a new process for making them, by which their strength is rendered more uniform.

A. P. Sharp read some observations in reference to the custom of coloring tinctures with red sanders-wood, as those of compound tincture of bark, and compound spirit of lavender; and strongly objected to the practice, owing to the insolubility of the coloring matter in water, and the unsightly appearance of a mixture of these tinctures with water. He preferred avoiding all such useless additions, but if they must be added, he preferred to employ the soluble coloring of cochineal.

A paper on effervescing powders, by John M. Maisch, of Philadelphia, was read by Edward Parrish, in which the uses of these powders was minutely considered in their various applications in pharmacy.

F. W. Tomlinson and J. Jacob Thomsen, of Baltimore, being duly recommended by the Executive Committee, were elected members.

Suggestions relative to non-official formulæ were made by Mr. Meakim, who advised that formulæ which are in use in various places under the same name, should be rendered uniform by a general understanding effected through the agency of the Association.

Moved and carried that when we adjourn, we will adjourn to meet at 9½ o'clock on Thursday morning; and that the first business in order shall be to fix upon a place for the next annual meeting, and at 12 o'clock resume the reading of scientific papers, and the examination of specimens.

On motion adjourned.

*Third Day—Morning Session—Sept. 11th, 1856.*

About the time adjourned to, the meeting was called to order by the President, and the previous minutes read and adopted.

Thomas H. Helsby, of Baltimore, was elected to membership.

The adoption of a place for the next annual meeting being in order, John L. Kidwell, on behalf of the Washington delegation, invited the Association to meet in that city, promising them a hearty welcome from the pharmacutists of the District of Columbia. Pending the consideration of this invitation, Charles Ellis, on behalf of the Philadelphia College of Pharmacy, offered the following resolution, viz:

Resolved, that when this meeting finally adjourns, it adjourns

to meet at Philadelphia on the second Tuesday in September, 1857.

After a free discussion the question was taken on the motion of Mr. Ellis, and decided in the affirmative.

The Committee on nominations reported the following members for the standing committees, viz :

For the *Executive Committee*—W. J. M. Gordon, of Cincinnati; Charles T. Carney, of Boston; Edward Parrish, of Philadelphia; Israel J. Grahame, of Baltimore; and C. B. Guthrie, of New York.

For the *Committee on the Progress of Pharmacy*—William Procter, Jr., of Philadelphia; Eugene Dupuy, of New York; Edward S. Wayne, of Cincinnati; James Cooke, of Fredericksburg, Va.; and Francis S. Walsh, of Washington, D. C.

The rules being suspended, the proposed members were elected to the service stated, *viva voce*.

[At a subsequent meeting of these Committees, E. Parrish was elected chairman of the first, and W. Procter, Jr., of the second.]

In view of the fact that great inaccuracy and discrepancy is known to exist in the weights and measures in common use among pharmacutists in the United States, Professor Guthrie offered the following:

Resolved, That a committee of three be appointed by the chair to take this subject into consideration, and report at the next annual meeting.

C. B. Guthrie, S. S. Garrigues, and C. T. Carney, were appointed to this service.

On motion it was Resolved, That the thanks of the Association are hereby tendered to the late President and Secretary, for the prompt and faithful discharge of their respective duties.

On motion it was Resolved, That six volumes of Gmelin's Chemistry, as offered by the Association for the best essay relating specially to Pharmacy, be awarded to Edward S. Wayne, of Cincinnati, for his admirable series of papers and extemporaneous communications.

On motion it was Resolved, That the whole subject of the sale of poisons by pharmacutists and others, and the legal means of restraining it, be referred to a committee of five members, to report in 1857.

To serve as this Committee, the President appointed S. S.

Garrigues, A. E. Richards, A. P. Melzar, John L. Kidwell, and Frederick Stearns.

The propriety of this Association taking some action in reference to the next Pharmacopœial Convention in 1860, having been brought forward in the Executive Committee's report, it was resolved that it be referred to a committee of five to report next year; and E. Parrish, of Philadelphia, G. W. Andrews, of Baltimore, S. M. Colcord, of Boston, W. B. Chapman, of Cincinnati, and John Meakim, of New York, were appointed.

A resolution directing the Executive Committee to procure a suitable temporary depository in Philadelphia, for the printed and manuscript documents of the Association, and for any specimens, books, or other contributions, that may become its property, was adopted.

On motion it was Resolved, That the remarks on the plants of Cherokee Georgia, by Robert Battey, presented by the Corresponding Secretary, be referred to the Executive Committee for publication.

The Report of the Committee on Home Adulterations being called up, the chairman, Professor Guthrie, informed the Association that they had no written report, but they were in possession of a large number of facts bearing on various parties, and wished to know whether it was the will of the Association that their names be reported in connection with the facts. After some discussion, during which the difficulty of fixing fraudulent intent on parties who may be in possession of adulterated drugs was fully canvassed, the following resolution, offered by Mr. Procter, was adopted, viz:

Resolved, That the Committee on Home Adulterations be continued, and instructed to report next year all the facts they can authenticate, and bring forward any recommendation in reference to the enactment of State laws controlling this evil, which they may deem advisable; and that the members of this Association, and all others interested, be requested to forward to the chairman of the Committee, C. B. Guthrie, (No. 12 Gold street, New York), all information bearing upon this subject that they may possess.

On motion of Professor Guthrie, G. W. Andrews, of Baltimore, was substituted for George D. Coggeshall, of New York, he having relinquished the drug business.

With the view of more effectually carrying out the expressed wish of many members of this Association, for the compilation of unofficinal formulæ in local use with many physicians of our Union, it was resolved, that a committee be appointed to collect such and report to the next meeting.

The following gentlemen were appointed to this service, viz: John Meakim, of New York, chairman; D. Henchman, of Boston; H. C. Blair, of Philadelphia; W. S. Thompson, of Baltimore; W. H. Gilman, of Washington; Wm. Heyser, Jr., of Chambersburg; A. E. Richards, of Plaquemine, La.; James Cooke, M. D., of Fredericksburg, Va.; R. H. Stabler, M. D. of Alexandria; W. J. M. Gordon, of Cincinnati.

An engrossed copy of the Constitution, as previously read and amended, was now adopted as a whole, and is as follows:

## CONSTITUTION.

OF THE

### American Pharmaceutical Association.

#### PREAMBLE.

*Whereas*, The advancement of pharmaceutical knowledge and the elevation of the professional character of apothecaries and druggists throughout the United States are dear to us in common with all well disposed pharmacutists; and *whereas*, a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business:—

*Therefore*, We the members of a Convention now met at Philadelphia, [September, 1852] composed of apothecaries and druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the objects, of deliberating on the condition of our profession, *do* hereby resolve and constitute ourselves into a permanent Association, to meet annually, at such times and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled, and do now adopt the following

## CONSTITUTION.

### ARTICLE I.

This Association shall be called the American Pharmaceutical Association. Its aim shall be to unite the educated and reputable Pharmacutists and druggists of the United States in the following objects:

1st. To improve and regulate the drug market by preventing the impor-

tation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

2nd. To establish the relations between druggists, pharmacutists, physicians and the people at large, upon just principles, which shall promote public welfare and tend to mutual strength and advantage.

3rd. To improve the science and the art of pharmacy by diffusing scientific knowledge among apothecaries and druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4th. To regulate the system of apprenticeship and employment so as to prevent as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.

5th. To suppress empyricism, and as much as possible to restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.

#### ARTICLE II.—*Of the Members.*

*Section 1.* Every pharmacist or druggist of good moral and professional standing, whether in business on his own account, retired from business or employed by another, who, after duly considering the objects of the Association and the obligations of its Constitution is willing to subscribe to them, is eligible to membership.

*Section 2.* The mode of admission to membership shall be as follows: Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said Committee. If after investigating his claims they shall approve his election, they shall at the earliest time practicable report his name to the Association, and he may be elected by two-thirds of the members present on ballot. Should an application occur in the recess, the members of the Committee may give their approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

*Section 3.* No person shall become a member of this Association until he shall have signed this Constitution, and paid his annual contribution for the current year. All persons who become members shall be considered as permanent members, but may be expelled for improper conduct by a vote of two-thirds of the members present at any annual meeting.

*Section 4.* Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution, and is liable to lose his right of membership by neglecting to pay said contribution for three successive years. Members shall be entitled, on the payment of three dollars, to receive a certificate of membership signed by the President, Vice-Presidents and Secretary, covenanting to return the same to the proper officer on relinquishing their connection with the Association.



*Section 5.* Every local Pharmaceutical Association shall be entitled to five delegates in the annual meetings, who, if present, become members of the Association, on signing the Constitution, without being ballotted for.

*Section 6.* Pharmacutists, Chemists, and other scientific men who may be thought worthy of the distinction, may be elected honorary members upon the same conditions, and under the same rules as appertain to active members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office or to vote at the meetings.

*Section 7.* Members who have paid their annual contribution for ten successive years shall be considered life members, and exempt from their yearly payments and entitled to a certificate to that effect.

### ARTICLE III.—*Of the Officers.*

*Section 1.* The officers shall be, a President, two or more Vice Presidents, a Recording Secretary, a Corresponding Secretary and a Treasurer, who shall be elected annually, and shall hold office until an election of successors.

*Section 2.* The President shall preside at the meetings and administer the rules of order usual in deliberative assemblies. He shall nominate all special committees, except a majority of the members present direct a resort to balloting or other means.

He shall sign the certificates of membership, approve all foreign correspondence and countersign orders on the Treasurer.

He shall present at each annual meeting a report of the operations of the Association during the year, with such information pertaining to its condition and prospects and the objects it has in view, together with such suggestions for its future management, as may seem to him proper.

*Section 3.* In case of the temporary absence or inability of the President, his duties shall devolve on one of the Vice-Presidents in the order of their names.

*Section 4.* The Recording Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays and papers of every description received by the Association, copies or abstracts of which shall be furnished for publication as may be required.

He shall furnish the chairman of every special committee with a list of its members and a copy of the minute of its appointment, and shall notify every member of the time and place of each annual meeting. He shall be a member of the Executive Committee.

*Section 5.* The Corresponding Secretary shall conduct all correspondence directed by the Association, and reply to all communications addressed to it in its recess. He shall from time to time address local associations, members and others possessed of information likely to be of interest to the Association, and report such correspondence to the Committee on the Progress of Pharmacy, of which he shall be a member.

*Section 6.* The Treasurer shall collect and take charge of the funds of the Association, and shall also hold and issue the certificates of membership. He shall pay no monies unless by the order of the chairman of one of the standing or of a special committee, authorized to appropriate funds of the Association, such order to be countersigned by the President.

He shall present a statement of his accounts at each annual meeting that they may be audited. He shall also report to the Executive Committee previous to each annual meeting, the names of such members as have failed to pay their annual contribution for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association and duly notified to do so.

#### ARTICLE IV.—*Of the Standing Committees.*

*Section 1.* There shall be two standing committees elected annually—an Executive Committee, and a Committee on the Progress of Pharmacy. They shall each consist of five members, and shall elect their own Chairmen.

*Section 2.* The Executive Committee, of which the Recording Secretary shall be one of the members, shall have charge of the revision of the roll, the investigation of applications for membership, the election of members in the recess, and the publication of the proceedings. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, also the names of any who having become disconnected with the Association, refuse to return their certificates of membership as provided by this Constitution.

The annual publication of Proceedings shall contain the corrected roll of members, full minutes of the several sittings, the Reports of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes and preparations as the Executive Committee may deem worthy of insertion. At least one copy shall be furnished each member of the Association.

*Section 3.* The Committee on the Progress of Pharmacy, of which the Corresponding Secretary shall be one of the members, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy and the collateral branches, on any new works bearing on these subjects published in this country or in Europe, on the condition of the drug market and the quality of drugs and manufactured articles, whether of foreign or domestic production, found in commerce.

#### ARTICLE V.—*Of the Meetings.*

*Section 1.* The meetings shall be held annually, or as the Association may from time to time determine, provided that in case of failure of this from any cause, the duty of calling the Association together shall devolve upon the President, or one of the Vice Presidents, with the advice and consent of the Executive Committee.

*Section 2.* At the opening of each annual meeting, the President, or, in case of his absence, one of the Vice-Presidents, shall call the meeting to order and preside until after an election of officers; in case the President and Vice-Presidents are absent, this duty shall devolve on the chairman of the Executive Committee, or in his absence on any member chosen by vote of those present.

In the absence of the Recording Secretary the President shall appoint a Secretary, *pro tempore*.

The order of business at the first session of each annual meeting shall be as follows:

1st. The appointment by the President of a committee of three persons to examine credentials, and report the names of those duly accredited.

2d. The Executive Committee shall report the names of new members and of persons present recommended for membership, who shall be immediately balloted for.

3d. The roll of those in attendance, as thus completed, shall be called by the Secretary.

4th. The reports of the standing and special committees shall be read by their titles, or in full, and laid on the table for future consideration.

5th. A committee to nominate officers for the ensuing year shall be appointed, consisting of one nominated by each delegation in attendance and three members appointed by the President, from among those not delegated, to report at the opening of the next session.

The first session shall close with the reading of the President's annual report and referring any portions requiring the action of Committees.

After the first session, the order of business shall be determined by the nature of the subjects presented and by the consent of the majority.

*Section 3.* During periods fixed by vote for scientific discussion and the exhibition of specimens and processes, the ordinary rules of parliamentary bodies shall be suspended, but at other times shall be enforced by the presiding officer, from whose decisions, however, appeals may be taken if required by five members, and the meeting shall thereupon decide without debate.

A motion reduced to writing and seconded shall be open to discussion, and while it is before the meeting, no motion shall be received unless to amend, divide, commit, to lay on the table, postpone or to adjourn; and a motion to adjourn shall be decided without debate.

On the call of any member, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the Minutes.

#### ARTICLE VI.

This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.

The hour having arrived for the further reading of papers and examination of specimens, Edward Parrish read an able paper on "Pharmacy as a business," which was directed to be published.

On motion, Dr. Aiken, Prof. of Chemistry, in the University of Maryland, and Examiner of Drugs, of the Port of Baltimore, who was present, was invited to give to the Association, such information as he may possess relative to the inspection of drugs, which was acceded to in the following communication:—

"Having been honored with an invitation to attend the present Meeting of the Pharmaceutical Association, accompanied with an intimation that it would be interesting to the members to learn something of the operation of the law regulating the examination of drugs, as applied at this Port, I have accordingly prepared a brief memorandum, giving the character and amount of the articles rejected during my term of service, with the total weight of all articles of the same classes imported; and lastly, the aggregate of all drugs and medicines introduced during the same time, showing the relative proportion between what has been admitted and what has been rejected. From May, 1853, to the present time, some three years and four months, I have had occasion to reject 40,876 lbs. of various medicinal articles; some directly adulterated; some deficient in active principles, the result of want of judgment in collecting and preparing; some injured by age and exposure; and some by moisture and rough handling in transit. The aggregate amount will hardly seem large if we take into account the long period required to accumulate it. The annual average, contrasted with the whole drug business of our port, will furnish most favorable evidence of the character of our drug market. Within the period named, 760,000 lbs. of Peruvian bark have been brought here, principally from Callao and Arica, some little from Valparaiso, and generally of very superior quality. I have been obliged to reject only 38,062 lbs., and it is but justice to our importers to add, that every pound of rejected bark has been the property of merchants in other places, who found it convenient to order their goods through Baltimore. Within the same period 205,410 lbs. of various roots and seeds have been imported, of which only 367 lbs. have been rejected, and this has been made up principally of ipecacuanha, from Rio, and sarsaparilla from the West Indies, injured by exposure to the water. Of herbs and flowers, 29,890 lbs. have been offered, and only 465 lbs., principally German chamomile, found unfit for use, and that from age. The volatile oils have been found adulterated to a much greater extent. Out of 3,736 lbs. imported, 1,928 lbs., more than one-half, was rejected as deviating too far from the requirements of the law. The oils rejected were principally oil of lemon and oil of juniper, both apparently adulterated with oil of turpentine. Oil of absinth was found diluted with alcohol, and oil of fennel seed with turpentine: If to the articles named we add 50 lbs. of creasote, in-

jured by spontaneous decomposition, and a few pounds of elaterium and lactucarium, badly prepared, we will have the sum total of all the drugs rejected.

Not having access to the records elsewhere, I am unable to furnish any comparative statement in regard to the relative quantity of inferior articles offered here and at other ports. To get a fair statement of the relation between the drugs admitted and those rejected, we need the aggregate amount of all that has been brought into this port since May, 1853. Such statement, to be exactly accurate, would involve more labor than the interest attached to the question seems to warrant; but I can briefly say, that the most important imports, not already enumerated, have been cream of tartar, tartaric acid, carbonate and bi-carbonate of soda, sulphate and carbonate of magnesia, sesqui-carbonate of ammonia, brimstone, borax, cape aloes, calcined magnesia, cantharides, argols and liquorice paste; and that the aggregate weight of these and all other drugs and medicines, not included in the classes already named, would be about 568,624 lbs., making the sum total imported 1,767,660 lbs., and the sum total rejected, as before stated, 40,876 lbs.

There is apparently no room for doubt in regard to the necessity for the Drug Law, and as little room for doubt as to its value in its present form, if properly and uniformly and universally applied. Whether it can be made more efficient, or whether any inconvenience now imposed by it on those engaged in the drug business can be remedied, are legitimate subjects for discussion. Only one instance of apparently deliberate evasion of the law has occurred within my knowledge. This was the work of a merchant residing elsewhere, who accomplished his object by sending his goods, after being rejected here, to a port in the British Provinces, from whence they were returned to one of our Southern ports, where government has no special examiner, and where the party called upon casually to do the duty of such examiner admitted the invoice. This was subsequently identified by a sample sent to me to determine its commercial value, preliminary to adjusting the duties. In conclusion, I may be allowed to add, that only one case of appeal from the decision of the government examiner has occurred here, and in that case his decision was confirmed.

*Total weight of Drugs and Medicines imported, and of the same rejected at the Port of Baltimore, from May, 1853, to Sept., 1856.*

|                     |          |                |          |             |
|---------------------|----------|----------------|----------|-------------|
| Peruvian bark,      | imported | 760,000 lbs.   | rejected | 38,062 lbs. |
| Volatile oils,      | "        | 3,736 "        | "        | 1,928 "     |
| Herbs and flowers,  | "        | 29,890 "       | "        | 465 "       |
| Roots and seeds,    | "        | 205,410 "      | "        | 367 "       |
| All other articles, | "        | 568,624 "      | "        | 54 "        |
| Total               |          | 1,767,660 lbs. |          | 40,876 lbs. |

WILLIAM E. A. AIKEN,  
Special Examiner of Drugs, etc.

Professor Aiken exhibited a variety of specimens collected during his professional duties, and directed attention specially to samples of arrow root from Bermuda and St. Vincent respectively, the former invoiced at 40 cents, the latter at 6 cents per lb., paying an *ad valorem* duty. He was of the opinion that this difference of over 500 per cent. in the duty charged was not in proportion to their value, and thought it should be remedied by marking up the latter.

On motion of C. B. Guthrie, a vote of thanks was tendered to Professor Aiken for his paper, and a copy requested for publication in the proceedings, which was acceded to.

A paper on Beth-root (*Trillium pendulum*) and its products, was read by Edward S. Wayne.

The same gentleman read a paper on *Sanguinaria canadensis*, and on *sanguinarina* and other products from that plant, which possessed considerable interest. Both of these subjects were well illustrated with specimens.

Frederick L. John, of Philadelphia, offered some verbal remarks on a curious phenomenon that had recently occurred in his laboratory. Having occasion to re-distil about fifty pounds of colorless nitric acid, he placed it in his retort, and after the operation was partially effected, he observed violet vapors in the retort, and a sublimate of blackish granular crystals, which on subsequent examination proved to be iodine. Mr. John believes that the source of the iodine was the nitrate of soda used in making the acid originally, but he was at a loss to determine in what condition it existed in the colorless acid, and the cause of its subsequent evolution during the process.

Then adjourned to 4 o'clock this afternoon.

*Afternoon Session—Sept. 11th, 1856.*

The meeting having been called to order by the President, the reading of the minutes of the previous meeting was dispensed with, in view of their general reading at the close of the meeting.

The following gentlemen, proposed as honorary members by the Executive Committee, were elected by ballot, viz: Daniel B. Smith, now of Germantown, late President of the Philadelphia College of Pharmacy; Thomas Farrington, Esq., of Boston,

Massachusetts; M. J. Bailey, M. D., Special Examiner of Drugs at the port of New York.

The following gentlemen, being properly recommended, were elected contributive members, viz: Silas Whitehead, of Lynchburg, Va.; D. S. Dyson, of Washington, D. C.; and Wm. F. Henry, of New York.

The report of the Committee on standards of quality of drugs for the use of Drug Examiners and others, &c., was called up, and after some discussion the following resolution was adopted, and the Committee, as by them requested, discharged from further service.

*Resolved*, That the Executive Committee be instructed to take all necessary measures that may be required to urge on the attention of the Secretary of the Treasury of the United States, the views of this Association relative to the qualifications necessary for an Examiner of Drugs, should the entrance of a new administration render such action necessary.

A paper was read by E. S. Wayne, on "A process for Elixir of Opium," which, with all the papers previously read, were referred to the Executive Committee, with discretionary powers in reference to their publication.

On motion, the minutes of the Proceedings during the several sittings were now read, and after amendment were adopted.

The Secretary on behalf of the members, strangers in Baltimore, offered the following resolution, which was carried:

*Resolved*, That the thanks of this Association are hereby tendered to the Maryland College of Pharmacy, and to the druggists and pharmacutists of Baltimore, generally, for their hospitality during our visit to their beautiful city, and for their liberal and cordial co-operation in the objects of the Association.\*

Then on motion adjourned to meet in Philadelphia on the second Tuesday in September, 1857.

W. J. M. GORDON,  
*Recording Secretary.*

\* See editorial remarks in the sequel.

## ON LEPTANDRA VIRGINICA.

By E. S. WAYNE.

Nat. Ord. *Scrophulariaceæ*. Sex. Syst. *Diandria Monogynia*.

Culver's Physic. Black Root.

The root of this plant, in its fresh state, is said to be too drastic and uncertain for medicinal use, producing vomiting and bloody stools, dizziness and vertigo, which properties are changed or modified upon drying the root. In the dry state it is laxative, cholagogue and tonic.

This root has acquired some celebrity amongst physicians of the Eclectic school as a laxative and tonic, in small doses, and is said to be valuable in dyspepsia, especially when connected with an inactive condition of the liver, and torpid condition of the bowels; it has also been found useful in dropsy, &c. &c. See American Eclectic Dispensatory.

This root has been only partially examined as to its proximate principles. Essential oil, bitter extractive, tannin, gum and resin have been found, but no principle representing the medicinal properties of the plant or root has been isolated in a pure condition.

The root, in coarse powder, was treated with alcohol in a percolator; a dark brown tincture was obtained; the alcohol was distilled off, and water added as the spirit evaporated; upon cooling, a dark colored resin was precipitated, (the Leptandrin of Merrill;) this was separated from the watery portion by filtration. The filtrate was of a brown color, and of an exceedingly nauseous, bitter taste; to this a solution of sub-acet. of lead was added as long as a precipitate was formed, and the excess of lead removed from the filtrate by sulph. hydrogen. The liquid was of a pale amber color after the treatment. A portion of it when allowed to evaporate spontaneously, left, upon evaporation, a dark colored mass, exceedingly bitter, and presenting no signs of crystallization. Another portion was treated with ether; it left the same bitter substance upon evaporation; and to a third portion ammonia was added; it caused the liquid to assume a darker tint, but after standing several days, no other change was observed to have taken place.

The resin obtained by evaporating the tincture, and the ad-



dition of water, had also a bitter taste, which was removed to a great extent by malaxating it with water. The bitter principle is evidently the active medicinal substance of the root, and all the medicinal value of the resin depends upon the accidental presence of this, which is soluble in water.

Ascertaining, by the former experiment, that water was a solvent of the only active principle of the root, another portion of the root, in coarse powder, was treated with water in a percolator, a dark colored infusion was obtained, having all the bitter taste of the root. To this, sub-acet. of lead was added, the precipitate was separated by filtration, and the excess of lead was removed by the addition of carb. of soda, and the carb. of lead separated by the filter. The pale yellow liquid was then allowed to filter through a column of purified animal charcoal. The liquid that passed through was totally devoid of taste and color. The coal was then washed with water until this commenced to have a bitter taste; it was then dried and treated with boiling alcohol, and the alcoholic solution allowed to evaporate spontaneously; it dried to a dark green mass, no signs of crystallization being observed during the time. This substance had, in a concentrated degree, the same nauseous, bitter taste of the root, that both the tincture and infusion of the root possess, and, upon powdering it, gave a pale green powder.

This powder was again dissolved in water and treated with ether, and allowed to evaporate; a number of needle-shaped crystals were formed, and were floating in the mother liquor, which was of a pale green color. They were separated upon a filter, and the mother liquor placed in the same vessel, and left to evaporate with hope of obtaining another crop of crystals. In this I was disappointed, as it dried up to a transparent, light green mass, in which no crystalline form was present. The crystals and the substance had the same bitter taste. From the above it may be inferred, that the active principle of this root resides in this bitter substance, which is crystallizable, and the presence of coloring matter, &c., prevented the mass of it assuming a crystalline form, and that the medicinal value of the so-called Leptandrin of the Eclectics depends upon the accidental presence of this substance.

*From the Proceedings of the American Pharm. Association, Sept., 1856.*

## PECULIAR ACRID PRINCIPLE OF THE NAT. ORD. TRILLIACEÆ.

By E. S. WAYNE.

The plants belonging to the order of Trilliaceæ, comprise an extensive genus of N. American herbaceous perennial plants, which are variously known by the names of wake robin, birth root, Indian balm, lamb's quarter, ground lilly, &c. They have a faint tanner's oil like odor, and when chewed impart an acrid astringent impression in the mouth, causing a flow of saliva, and a sensation of heat in the throat and fauces. Nearly all of the species of this genus are said to be medicinal, and possess analogous properties, the most common of which are *T. erythrocarpum*, *T. grandiflorum*, *T. sessile*, *T. erectum* and *T. nivale*, and are consequently most frequently collected. The *Trillium pendulum* seems to be intended as the officinal plant in the A. E. Dispensatory. But whether the root I have examined is the product of this variety or not, I am not prepared to say. We receive a large quantity of the root from the interior of Kentucky, and have not been able to get any information from those that collect or we receive it from, to enable me to form an opinion to which particular member of the family it belongs. From the similarity of the root, I should judge it to be obtained from one and the same plant.

The root, as we receive it, is an oblong rhizome, with numerous rootlets attached to it, and of a yellowish brown color. The acidity of the root seems to reside in the rhizome, as the rootlets have little or none of its acrimony. Upon removing the epidermis of the rhizome with a knife, it presents a white, starchy appearance, and tinct. of iodine added to the cut surface strikes a deep blue color, indicating the presence of starch in abundance. This root has been examined and found to contain volatile oil, gum resin, extractive, tannic acid and starch.

Mr. Merrill has obtained a substance from the root which he calls, I believe, trillin; the process for obtaining which he has not made public, nor have I examined the product.

I was induced to examine this root from its exceedingly acrid taste, resembling that of senega somewhat when chewed, with the expectation of finding in it some principle analogous to senegin.

The root, in coarse powder, was treated with alcohol in a displacer and the tincture evaporated, and water added as the alcohol distilled away. Upon cooling, a very fluid oleo-resin was found floating upon the top of the watery portion, of a light brown color, possessing all the peculiar oil-like odor of the root, but not the acrid taste. This was separated from the watery portion by a separating funnel.

The watery portion was acrid to the taste; to it both acetate and sub-acetate of lead was added as long as a precipitate was produced, then filtered from the lead precipitate, and the excess of lead removed by the careful addition of sulph. acid.

I was surprised to find, upon tasting the clear filtrate, that its acrid taste had not been in the least diminished by the addition of the lead salts, and satisfying me that the acrid principle was a very different substance from that of senega. This filtrate was then set aside until next day, for further examination. Upon looking at it next day, I observed that a gelatinous precipitate had formed, and that the supernatant fluid had entirely lost its previous acrid taste. The precipitate was collected upon a filter and washed with water; this was troublesome, from the nature of the precipitate, and had to be very cautiously done, as I found that it was again taken up by the wash water. It was then allowed to become almost dry upon the filter, then detached from it, re-dissolved in dilute alcohol and left to spontaneous evaporation. It dried to a white, amorphous mass, easily powdered, and had all the acrid taste of the root in a concentrated degree. I subsequently tried its solubility in alcohol; it dissolved completely, and was then evaporated to a certain extent, spread out with a brush on glass, which, upon drying, was easily detached in glistening scales. This substance, like saponin and senegin, has the peculiar property of forming with water frothing soap-like mixtures. Half a grain of this to two ounces of water, is sufficient to develop this peculiarity, and the foam formed upon the water will remain unbroken for several days.

To ascertain whether this substance was the result of oxidation of the oil obtained in the first treatment, it was submitted to oxidizing operations. A portion of the oil assumed a changed appearance by the treatment; became a white substance, which

was separated by the filter, which I have saved for further examination. The oxydized oil, however, gave no indication of yielding a substance similar to the acrid principle mentioned.

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#### WINE OF COLCHICUM SEEDS.

To the Editor of the American Journal of Pharmacy:

DEAR SIR,—With regard to a question asked by a correspondent from Portland, Me., on page 397 of this Journal, concerning the best method to reduce colchicum seed to powder, you will permit me to say a few words. Drying them well and bruising them in small quantities under a heavy pestle in an iron mortar, is the way usually followed on the continent of Europe; or else they are ground in a sharp coffee mill, a small number only being put in at a time. It cannot be denied that the operation of reducing these seeds to a bruised condition is among the most tedious and laborious the pharmacist has to perform; a method, therefore, which will save *some* time and labor will be welcome to him.

In preparing the wine of colchicum seed, I have adopted the following way for some time past, and always with a satisfactory result: I put the whole seed in a bottle together with about one-third or one-fourth of the required quantity of wine, and mark the level of this mixture with a strip of paper. After macerating the seeds for two or three days, I empty the bottle into a suitable vessel, decant the liquid and bruise the seeds in a clean iron mortar, throwing in not more than one or two tea-spoonfuls at a time. The maceration softens the seeds somewhat, sufficiently to allow them to be mashed with some exertion. Proper care must be taken in this manipulation to avoid a loss of the seeds or the liquor. When well bruised in this way, they are put back into the bottle with the liquid, and wine added to make up the deficiency occasioned by evaporation. With the remaining two-thirds or three-fourths of the wine, all the vessels and instruments used ought to be well washed, the wine then added and the preparation completed according to directions. By following this way I have succeeded, with patience and unwearied labor, to bruise six ounces of the seeds in hardly more than two hours, which I think is quite a satisfactory result.

Yours, very respectfully,

J. M. MAISCH.

*Philadelphia, Oct. 1856.*

## ON A NEW PROCESS FOR DOVER'S POWDER.

*Louisville, August 26th, 1856.*

MR. WM. PROCTER, JR. :—*Dear Sir*,—I have taken the liberty of enclosing to you a sample of Dover's powder, made in a different way from any process I have ever seen. It may not be new to you, but I always make it in the way I propose, and the result has always been satisfactory. The greatest difficulty I met with in making this compound before I adopted the present, was in reducing the sulphate of potash to a fine powder. This I obviated at once by dissolving the salt in boiling water to perfect saturation, and by the addition of alcohol I precipitate the salt in a highly divided state, which is readily mixed with the opium and ipecac. I enclose you a sample for your examination. This is not meant as a communication, but act as you think proper.\*

Very respectfully, your obed't serv't,

T. H. TANNEHILL.

## ON PILLS OF IODIDE OF IRON.

*Memphis, Tenn., Sept. 11th, 1856.*

To the Editor of the American Journal of Pharmacy :—

DEAR SIR,—In the last (July) number of the Medico-Chirurgical Review, I observed the following paragraph :—

“ M. Perrens proposes the preparation of pills of the iodide of iron ac-

\*[NOTE.—The U. S. Pharmacopœia, in directing the sulphate of potassa to be in crystals, designs it to act as a more effectual means of thoroughly dividing the opium and ipecacuanha, which are thus reduced to the finest condition by the amount of attrition necessary to reduce the sulphate to a powder of sufficient fineness, and thus *insures* the requisite trituration. This is the more important as it is too much the custom to have the sulphate ground to a powder, and simply mix the three ingredients. This is a pharmacopœial precaution, analogous to that of directing *powdered* opium to make laudanum, it being presumed that dry opium is thus insured if the directions are followed. But *dry* opium will answer equally well if properly broken up ; and so also powdered sulphate of potash may be used with equal propriety, if the requisite amount of trituration is subsequently bestowed to reduce the whole to a homogeneous powder. A specimen of the Dover's powder received from the author, made by the above process, is quite unexceptionable, and equal to any we have seen.—EDITOR AMER. JOUR. PHARM.]

according to the following formula: Take of iodine, 1 gramme, powder of iron (not oxidized) 1 gramme, honey 1 gramme, liquorice powder 2 grammes. Rub together in an iron mortar the iodine and the powder of iron until they are completely mixed, then add the honey and beat it till the mass becomes black and ceases to exhale an odor of iodine, then incorporate the liquorice powder with it and divide rapidly into twenty-five pills. Silver them and preserve in a stoppered bottle, as they are slightly deliquescent. The presence of an excess of iron preserves the iodide for an indefinite period from the oxidating influence of the air."

My object in calling your attention to this paragraph is to suggest to your recollection a communication of my own in the Jan. number of the Journal Pharmacy, for 1854, presenting the formula for a preparation precisely similar, not as a *proposed* method, but as having been long used in my own practice and that of several Memphis physicians, to whom I had communicated it. The proposal of M. Perrens appeared in the French Bulletin Gen. de Therap., for March, 1855, while my communication appeared in your Journal in Jan., 1854, more than a year in advance of the French Pharmacien. Should you think it worth while to dispute precedence with the Bulletin, this note is at your service; but in any case I would mention, that if the pills are prepared with any viscid vegetable extract as an adjuvant, as in my formula, the silvering of the pills to prevent deliquescence is quite unnecessary, provided a sufficient quantity of dry liquorice powder be kept with them, for incipient liquefaction in that case renders the pills sufficiently adhesive to attract a small portion of the powder which arrests the process. With this precaution alone I have kept the pills in an ordinary paper pill box for three weeks uninjured. You will observe also that the reason which M. Perrens gives for an excess of iron was also anticipated by me.

Respectfully, your obed't serv't,

DANIEL F. WRIGHT, M. D.

Prof. of Physiology and Pathology in the Medical College,  
Memphis, Tenn.

REMARKS ON BOUTIGNY'S METHOD OF PREPARING  
PROTIODIDE OF MERCURY.

By CHARLES BULLOCK.

The Pharmacopœia of the United States directs proto-iodide of mercury to be prepared by direct combination of its elements. When thus prepared, it soon loses its original green hue, passing to that of an ochry yellow. This change occurs equally when the salt is exposed to light, or when protected from it. Whether the chemical or therapeutical character of the salt is affected by this change I have not been able to determine. It has been our custom not to dispense it after it assumed the yellow tinge. In order to obtain a proto-iodide which would not be liable to this change, I was induced to try the formula recommended by M. Boutigny, as described in the 8th vol. of this Journal, p. 326. Its preparation is here recommended by double decomposition between iodide of potassium and calomel. A specimen made after this process retained its original green hue for a long time. Pleased with the result, I essayed its manufacture on a larger scale, when some unexpected results were obtained. Fifteen ounces of iodide of potassium in powder, and twenty-one and three-eighth ounces of calomel, were used. These are the proportions of M. Boutigny, and are nearly those of the atomic weights of the two salts. The iodide of potassium and calomel were rubbed together. On the addition of hot water, large globules of mercury made their appearance. The water decanted from the proto-iodide was examined, and found to contain mercury in solution. A drop placed on light copper foil did not give a mercurial stain till a fragment of iodide of potassium was added. Supposing some biniodide of mercury might have been formed during the process, and dissolved by the chloride of potassium present, a small quantity was allowed to evaporate in a watch glass, no bin-iodide was deposited, but crystals resembling iodo-hydrargyrate of potassium. A solution of iodide of potassium added to the mother water produced no change, while a solution of bi-chloride of mercury produced a copious red precipitate. In this way I obtained six and one-fourth ounces of bin-iodide of mercury from the washings.

How are we to account these results? can we suppose that one portion of the calomel parted with its chlorine to another portion, converting it into bi-chloride, and leaving metallic mercury, thus giving formation to bin-iodide of mercury? This reaction would, of course, leave an excess of iodide of potassium in the solution of which the bin-iodide of mercury would be formed. That the changes which occurred left a large portion of iodide of potassium uncombined, is evident from the amount of bin-iodide of mercury obtained by adding corrosive sublimate to the washings; and this, notwithstanding a slight excess of calomel, was used. I was unable to determine accurately the amount of proto-iodide of mercury, as it was so contaminated with the metal.

*Philadelphia, Oct. 7th, 1856.*

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#### ON ADULTERATED POWDERED ASSAFETIDA.

By JOSEPH F. HEATHCOTE.

This sample was supplied by a drug house doing an extensive business in powdered drugs in this city, and the cause of the examination was from the smallness of bulk and great weight, neither of which occur in the genuine article.

It was proposed to examine and determine, if possible, how the adulteration was committed, accordingly 2 drachms, or 120 grs. were digested without any other substance (which was easily shaken up and divided by its composition) in 95 per cent. alcohol, several exhaustions took place during 6 or 8 days, finally boiling alcohol was used; all the tincture was carefully evaporated to the consistence of ext. jalapæ, the soluble matter was then weighed, and out of 2 drachms only 14 to 15 per cent. was left in the evaporating dish.

The substance remaining in the filter was again washed and dried, and there was found over 100 grains of a greyish substance, rather heavy and gritty, but polishing copper or silver with great ease. It showed no effervescence with sulphuric acid, and was not altered by the blowpipe.

It is a question with many practical and successful physicians whether such articles as assafetida should be submitted to the



process of drying for powdering, but if so it will be well for prescribers to be certain that they are not defrauded of the article they order.

### FLUID EXTRACT OF ERGOT.

To the Editor of the American Journal of Pharmacy.

DEAR SIR:—While located in your city, I was requested by Dr. Ellerslie Wallace to prepare a concentrated fluid preparation of ergot, which would be reliable and combine smallness of dose with the desirable property of not undergoing change by keeping. The following preparation having upon trial successfully answered these requirements, I present it to your notice, that you may, if you think proper, give it a place in the Journal of Pharmacy.

The oil of ergot does not enter into the composition of this preparation as I believe it to be inert, and its virtue as prepared (with ether) to be due entirely to some principle extracted along with it by the menstruum. With the above in consideration, the following process was pursued in making this preparation, which I have called

#### *Fluid Extract of Ergot.*

|                                                                                                             |                      |
|-------------------------------------------------------------------------------------------------------------|----------------------|
| <b>R.</b> Freshly powdered ergot,                                                                           | 4 oz. (troy)         |
| Diluted alcohol, made by mixing one part<br>of 95 per cent. alcohol, with four parts<br>of water, . . . . . | one pint.            |
| Water, . . . . .                                                                                            | sufficient quantity. |
| Alcohol, . . . . .                                                                                          | 6 fluid ozs.         |

Macerate the ergot in the diluted alcohol for four days, then transfer to a percolator, and when the liquid ceases to pass, pour on water until two pints have come through; by means of a water bath evaporate to six fluid ounces, to this add the alcohol and mix; let it stand with occasional agitation for twelve hours, and filter. When finished it is of a dark Maderia wine color, possessing a strong odor and taste of ergot. One fluid drachm or a teaspoonful of this fluid extract represents one scruple of ergot.

This preparation has been fully tested with satisfactory results, by Dr. Ellerslie Wallace, of your city, and Drs. J. G. Clark and H. R. Harrison, of Staten Island, and in hopes that it might be of service to others of the profession, I submit it for trial.

Very truly, yours, W. J. WATSON.

North Shore, Staten Island, September 15th, 1856.

**ACTION OF OIL OF SASSAFRAS UPON METALLIC VESSELS, PARTICULARLY THOSE WHERE LEAD HAS BEEN USED AS A SOLDER, AND AN OBSERVED COMPOUND RESULTING FROM THESE CONTAINING LEAD.**

By E. S. WAYNE.

Having placed a quantity of oil of sassafras, which, at the time, was of a light straw color, in a copper can, (such as the oils of lemon and bergamot are imported in,) and a short time after, having my attention called to a portion of oil taken from the same, I was much astonished at the singular change which had taken place in it. The oil had changed from a light straw to a deep inky looking fluid. I at first suspected that something which might have been in the bottle had caused the change, but upon examining the oil in the can, I found it in the same condition. Upon holding the bottle up to a strong light, the oil appeared to be full of dark particles suspended through it. I was at a loss to account for the change which had taken place, as there was no foreign substance in the can which could have produced it, as it had been thoroughly cleansed and dried before the oil was placed in it, and consequently could form no other conjecture, save that the copper can had been the cause of the difficulty.

I found that the black particles mentioned were easily separated from the oil by filtration. The filtrate was not perceptibly darker than the original oil. It was tested for the presence of copper, but gave no indication of its presence.

The black mass separated by the filter was then removed, and deprived of the remainder of the oil present by absorbents. I could not rid it perfectly by this process. It was again placed upon the filter and treated with ether (in which the black substance was insoluble,) as long as it took up a sensible trace of oil.

It was, after drying, of a light slate color, and possessed a slight taste and smell of sassafras, and was insoluble in alcohol. A portion of it was incinerated upon a platina foil; it produced a voluminous smoke and left a small amount of cinder, which, upon urging the heat by the blowpipe, consumed only partially. Upon examining it with a lens, small metallic globules were visible, and when attempting to remove the residue from the foil, it

became evident that the globules were reduced lead, and that a portion of them had become amalgamated with the foil.

A larger portion was then placed upon charcoal and ignited, and the reduced metal dissolved in nitric acid, and tested for copper, tin, and lead. Lead only was found.

Another portion was heated in a glass tube, and the fumes condensed in the cool portion. It had a slight sassafras odor, and was acid to test paper. It was evidently a pyro-product.

It is evident, from the above, that sassafras oil has the property of forming a compound with lead. The question now arises, from whence came it? Did it come from the apparatus that oil was prepared in, or did it take it from the original tin can, (from the solder)?

Upon examining the copper can, the joint near the top contains a large portion of lead solder, exposed to the action of the oil. In the tin can the solder is upon the outside; and, as the oil was not colored in the tin can, the inferences are, that the lead was obtained from the joint in the copper can, which compound was insoluble in the oil itself, and was suspended in it, causing the dark color.

The oil filtered from the precipitate I have not examined as to whether any change had taken place in it, merely testing it for the presence of copper.

## ON A NEW PROXIMATE PRINCIPLE FROM THE SANGUINARIA CANADENSIS.

By EDWARD S. WAYNE.

The *Sanguinaria Canadensis*, it is well known, contains an alkaloid, *sanguinarina*, identical, in its ultimate analysis, with *chelerythrin*, the alkaloid of the *Chelidonium majus*, and forming like it red salts with acids, and possessing very acrid narcotic properties.

The *Chelidonium* has been very accurately examined, as to its proximate principles, but the *Sanguinaria*, I believe, has been investigated no further than the obtaining of its alkaloid. I was led into some further investigation of this substance accidentally. Having occasion to prepare a quantity of its basic principle, I adopted the process for its extraction published by

Dr. Sheil, of St. Louis, in Silliman's Journal, also, in the American Journal of Pharmacy, which is as follows: Treat the coarse powdered root with dilute sulph. acid in a percolator, and precipitate the obtained liquor with aqua ammonia, the addition of which causes a voluminous precipitate of a deep purple color, which is washed with water upon the filter, dried and treated with ether, which dissolves out the Sanguinarina; this solution is to be treated with animal coal, which removes most of the accidental coloring matter, and the alkaloid is obtained as a sulphate from this ethereal solution, by a solution of sulphuric acid in ether, of a bright vermilion color, the salts of Sanguinarina being insoluble in ether.

I observed, after having precipitated all the Sanguinarina, that there was some other substance held in solution by the ether; it was of much deeper color, and left a yellowish solid deposit upon the sides of the vessel containing it.

The ether was left to evaporate spontaneously. A substance having a dark red color, and without any distinct crystalline form, was left. From its acrid taste it evidently contained a portion of Sanguinarina; I tried a number of methods to rid it of its presence without success. At last I dissolved the whole of it in ether, and agitated it with dilute sulph. acid, which removed the Sanguinarina completely. The ethereal portion was separated from the acid and allowed to evaporate spontaneously; a dark red mass was left; translucent, but could distinguish no crystalline form. It was placed in a mortar, and upon powdering it, gave a dull red powder, tasteless, insoluble in water. Upon heating it with water it melted and formed a dark, brittle, resinous mass.

This was dissolved in alcohol and treated with animal charcoal; the color of the solution after this treatment was of a pale yellow tint. It was treated a second time with the coal, but no change in the color of the solution was perceptible; this was evaporated spontaneously, and left a pale red mass.

This mass was dissolved in boiling alcohol, and to the solution hydrochloric acid was added; the addition produced a deep red color. This was set aside to cool, and deposited the excess of the acid compound in beautiful needle-shaped crystals of a bright red color.

With sulphuric acid it forms a confused warty mass of crystals,

which rub to a bright red powder. From its acid combinations it is precipitated of a pale yellow color, which, dried, has a pale red tint.

The quantity obtained from the ethereal solution from which the sanguinarina had been obtained, being very little, the original precipitate was treated with alcohol in a displacer—a deep red tincture was obtained. To this water was added, which caused a precipitate; this was collected on a filter, dried, and found upon examination to be the substance sought. The quantity of it existing in the root is but small, as I obtained, from fifteen pounds of the root operated upon, 130 grains of this substance.

The dark substance left after extracting the Sanguinarina and the last mentioned body, possesses strong tinctorial properties. It is soluble in acids, producing a dark red compound, and is precipitated unaltered by the addition of an alkali. I have not examined it further.

From the examination of this root it is evident that its acrid and pungent taste is due entirely to a salt of Sanguinarina, probably a chelidonate, which acid (chelidonic) I have obtained from this root, the other two substances mentioned having but little taste, and this may be due to the accidental presence of a trace of the alkaloid.

The red color of the root, and red color of its tincture and other fluid preparations is not due entirely to the Sanguinarina, as all the other products have strong tinctorial properties, and forming with acids deep red solutions.

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#### EXTRACTUM UVÆ URSI ET LUPULINÆ FLUIDUM.

By THE EDITOR.

Dr. W. T. Howard, of North Carolina, having occasion for a preparation which should combine the activity of the two remedies indicated in the title, suggested that they might be prepared in the form of a fluid extract. To effect this the following formula was adopted, viz:—

Take of Uva Ursi, in coarse powder, 8 ounces (Troy)  
Lupulin, 21½ drachms “  
White sugar, 8 ounces “  
Alcohol and water, of each sufficient quantity.

Macerate the uva ursi in a mixture of one part of alcohol and four of water for 24 hours, and then displace slowly with the same menstruum until two pints of liquid have passed. Put the lupulin in a small glass percolator, and slowly add alcohol (sp. gr. 835) until a pint of tincture has passed. Evaporate the first liquid in a water bath to ten fluid ounces, add the sugar and then, having previously carefully evaporated the tincture of lupulin to four fluid ounces in a water bath of 150° F., add it to the syrup of uva ursi; mix them well together. Now continue the heat of the water bath until the whole measures a pint, and strain whilst hot.

Nearly the whole of the soluble matter of the lupulin will be retained. The preparation has a dark brown color, and a well marked taste of the two ingredients.

Dr. Howard employs this fluid extract for an irritable condition of the bladder where fluid extract of buchu was found too stimulating.

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#### GLEANINGS—CHEMICAL AND PHYSIOLOGICAL.

*English Oak Galls.*—Dr. Vinen (Journal of the Linæan Society) states that galls from the English oak are used in Devonshire for making ink. Having been requested to ascertain their tannic value, he found them to contain but 17 per cent. of tannic and gallic acids, whilst a comparative trial with ordinary galls yielded 56 per cent. Dr. Vinen attributes this small per centage to the fact that all the galls had been perforated by the *cynips* previously, and that he believed if collected at an earlier period before the escape of the fly, the per centage would be found larger.

*The assimilative qualities of various Fatty Bodies.*—M. Berthe, (Comptes Rendus, May 12, 1856) in a series of experiments on fixed oils, has ascertained that they vary considerably in their capability of assimilation when taken into the stomach. He tried butter, olive, poppy, almond and whale oils, English cod-liver oil and pure brown cod-liver oil. Each of these were administered to one man in good health and under a regular diet, in doses increasing from one to two fluid ounces daily. By exact daily determination of the quantity of oil in the feces, he ascertained the time requisite to arrive at complete saturation, when the whole of the fatty body was excreted. It was twelve days

for the poppy, almond and olive oils; about a month for the butter, whale oil and decolorized English cod-liver oil, and a *month's use of the brown cod-liver oil caused no perceptible increase in the fatty matter of the excrement*. He therefore divides the fatty bodies into three classes: 1st, the difficultly assimilable, (vegetable oils.) 2d, the assimilable, as butter, whale oil, &c. 3d, very assimilable, brown cod liver oil.—*Chemist*.

*Detection of Picric Acid in Beer*.—M. Pohl, of Vienna, states that carbazotic (picric) acid may be detected in beer, when in the proportion of one-eight millionth, by boiling a little very white wool, unmordanted, in the suspected beer for six or eight minutes, when, if present, the wool contracts a more or less deep canary yellow color.—*Chemist*.

*New Process for Arresting the Escape of Corrosive Vapors from Chimnies*.—By M. TESSIER.—The process consists essentially in causing the gases from the manufactory to pass through an oven containing lime, or its carbonate heated to a temperature favorable to the absorption of the gases, before they can pass into the chimney. Hydrochloric acid and corrosive chlorides are thus arrested in the author's aluminium works, near Rouen.—*Chemist*.

*Chrysophanic Acid*.—M. Rochleder has extracted chrysophanic acid,  $C^{23} H^8 O^6$ , identical with rheine, from wall lichen (*Parmelia parietina*) or from rhubarb, by the following process:—

These substance are exhausted by weak alcohol, with the addition of a small quantity of caustic potassa. It is strained through a cloth with pressure, filtered, and a current of washed carbonic acid passed through the solution. A precipitate is formed, which is collected and dissolved in spirits of wine, at  $122^{\circ} F.$ , to which a little potassa has been added. The solution is filtered and precipitated with acetic acid, the precipitate redissolved in boiling alcohol, mixed with water and filtered, when the liquid deposits chrysophanic acid in yellow flocks, which may be obtained in crystals from alcohol.—*Jour. fur Prac. Chem.*

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#### ON IODISED OIL. By M. HUGOUNENQ.

Various processes have been proposed for the preparation of iodised oil.

The first, published by M. Personne, consists in passing a

current of steam into a mixture of oil and iodine, to cause a combination of the metalloïd with the fatty matter.

It has been said that this method of operating is apt to cause the formation of hydriodic acid ; this is true.

The second process, that of M. Berthé consists in dividing the iodine in a mortar, adding the oil, introducing the mixture into a flask, which is heated on a sand bath until decolorized ; the operation is easily performed, and the iodised oil rarely contains hydriodic acid, but in avoiding this misfortune, we fall into another which is quite as serious; indeed, however quickly the combination may take place, it still requires an hour, and a temperature of 80° C. (176° F.) Oil of almonds exposed to this temperature, acquires the property of very quickly becoming rancid.

Another chemist has advised the dissolving the iodine in ether, so as to hasten its combination with oil of sweet almonds; this end is attained on the condition of leaving in the iodised oil the greater part of the ether, for if we wish to remove all the ether, it must be powerfully heated, and for a long time ; a temperature of 90° C. (194° F.) continued for three hours, will not suffice to remove the odor of the ether from iodised oil thus prepared.

Having been struck with these serious drawbacks, and considering the influence which solar light has on many compounds of iodine, I determined to make some experiments for the purpose of ascertaining whether the combination of iodine with oil of sweet almonds would not take place under the influence of the solar rays, and I have been perfectly successful.

The following is the very simple method which I used :—

|                 |           |
|-----------------|-----------|
| Iodine,         | 2.50 grs. |
| Oil of almonds, | 500.00 “  |

The iodine is pulverised in a porcelain mortar with 3 or 5 grammes of oil ; after 5 or 6 minutes trituration, the remainder of the oil is added by degrees, and a perfectly limpid liquor is obtained, of a red color, which is only a solution of the iodine in the fatty body, but it is a complete solution. This solution, when exposed for 15 minutes to the solar rays, is perfectly decolorized.

The iodised oil thus prepared has the odor and taste of pure oil of almonds ; it does not become rancid more quickly than that oil, and contains no hydriodic acid.

I felt disposed to think that the combination was due to the heat



of the solar rays, rather than to a special action of the light ; but it was not difficult to ascertain that this heat alone would not have produced the phenomenon, especially in so short a time ; a solution of iodine in oil, which was kept for four hours at a temperature of  $32^{\circ}$  C. ( $89^{\circ}$   $6'$  F.), had lost none of its red color.

It sometimes happens that iodised oil will resume its red color, when kept in the dark or in diffused light ; but a fresh exposure to direct light decolors it again very quickly.—*London Chemist, from Journal de Pharmacie et de Chimie.*

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#### ON THE ACTION OF THE VEGETABLE ACIDS ON CALOMEL.

By M. BAUWENS.

The most enlightened physicians, the greatest chemists, and most prudent pharmacutists, on the faith of tradition, always advise patients not to take any acid substances when calomel has been administered to them. M. Bauwens has made some investigations on this subject, and has obtained the following results.

At the ordinary temperature, at  $86^{\circ}$ , and even  $104^{\circ}$  F. ( $30^{\circ}$  and  $40^{\circ}$  C.) calomel, in prolonged contact with a concentrated solution of tartaric or citric acid, gave no trace of corrosive sublimate.

Calomel, which is insoluble in water, alcohol and ether does not instantly communicate to the tongue the styptic flavor of the soluble preparations of mercury ; but this taste is perceived when the alkaline haloid salts of the saliva come in contact with it, in consequence of the property possessed by alkaline salts of dissolving the mineral haloid salts to form double salts with them.

Calomel appears to owe its anthelmintic and purgative properties to the haloid salts which it finds in the economy. If large doses of calomel act relatively less powerful than small ones, it is because in the first case the mercurial salt does not find in the economy a sufficiency of alkaline salt to convert it all into soluble salt ; whereas, in the second case there are sufficient alkaline salts in the intestinal canal to dissolve the mercurial salt completely. Consequently children who seldom take much chloride of sodium, can take more calomel in proportion than grown people. The physicians of sea-side towns, where the water is brackish, seldom prescribe calomel, and the doctors of the fleet have been obliged to abstain from giving it to sailors who eat salt meat.

Hydrochloric acid has not the property of uniting immediately with calomel, or to cause it to pass from the state of proto- to that of deuto-chloride, because the affinity of chlorine for hydrogen (reduction of the chloride of silver by means of nascent hydrogen) exceeds its affinity for mercury. Still its employment should not be advised with calomel, because combining with the alkaline substances in the body, it passes to the state of chloride, whose action we have already described.

The extreme ease with which the mercurial chloride is converted into a soluble salt under the influence of so many chemical agents, renders great prudence necessary on the part of the physician.

Corrosive sublimate dissolved in syrup, does not deposit calomel for twenty-four hours. The saccharolate had not lost its clearness after four days, nor deposited the least precipitate, after having been exposed to a temperature varying from  $86^{\circ}$  to  $140^{\circ}$  F. ( $30^{\circ}$  to  $60^{\circ}$  C.) After boiling for some time, the syrup becomes turbid and deposits proto-chloride. The saccharine solution, already more or less decomposed by the partial carbonization of the sugar, yielded a further quantity of deutochloride to sulphuric ether, which proves that the sugar which is generally added to calomel is rather employed to give a pleasant flavor to the medicament, than to convert into protochloride the traces of deutochloride, which the calomel might possibly contain, as is the general opinion.

Animal albumen, which is generally recommended to neutralise the effect of deutochloride of mercury does not possess this quality to the extent that might be desired. M. Orfila, who first recommended albuminous water in poisoning by corrosive sublimate, advises giving enough to decompose the whole, but not to give too much, so that an excess might not redissolve the sparingly soluble compound, which this mercurial chloride forms with the albumen, and thus restores to it a portion of its poisonous qualities.

In poisoning by the soluble salts of mercury, we think that the preference as an antidote should be given to substances which the digestive functions will not alter, such as hydrated proto-sulphuret of iron, advised by M. Mialhe, tannate of potassa and iron filings themselves.—*London Chemist*, August, 1856, from *Annales de la Société de Médecine de Gand*, May, 1856.

## ON CHLOROFORM.

Bremon gives the following reactions by which the impurities of chloroform are determined. It boils at  $45^{\circ}$  C.; at all temperatures it is very volatile; it does not produce so strong a sensation of cold as ether in its evaporation from the hand. Entirely free from alcohol and water, it should have, at least, a specific gravity 1.494 at  $15^{\circ}$  C. Potassium does not decompose it, the surface of the metal being only covered with small gas bubbles, but when alcohol is present, the entire mixture becomes quite colored, attended with the liberation of sharp acid fumes. On the addition of 1 to 5 per cent. of 90 per cent. alcohol, it becomes cloudy, and it only regains its transparency when 10 per cent. is added. Pure chloroform on being shaken with a small portion of bi-chromate of potash, sulphuric acid and water, and allowed to remain quietly for a time, assumes a light greenish yellow color; the presence of 5 per cent. of alcohol is immediately detected, the mixture separating in two sharply divided layers, the lowest of which being of a green color. The same occurs when ether is present. By the addition of water, the specific gravity of chloroform can be reduced to 1.40; potassium in such chloroform is rapidly oxidized.

Alcohol, the most common adulterating menstruum, lowers the specific gravity in the following proportions:

| Vol. of Alcohol. | S. G.  | Vol. of Alcohol. | S. G.  |
|------------------|--------|------------------|--------|
| 0                | 1.4945 | 5                | 1.4772 |
| 1                | 1.4908 | 10               | 1.4602 |
| 2                | 1.4874 | 20               | 1.4272 |
| 3                | 1.4845 | 25               | 1.4090 |

S. S. GARRIGUES.

## ON THE ACTION OF PHOSPHATE OF SODA ON FLUOR SPAR.

By H. BRIEGLER.

Combinations of fluorine will certainly become of technical importance; their mode of preparation is at present so very difficult, and they can be made only in such small quantities at a time, that the author was induced to experiment on the changes which take place at an elevated temperature, between phosphate of soda and fluoride of calcium, hoping to arrive thus at a practical method for obtaining fluoride of sodium.

It was calculated that  $2\text{NaO}, \text{PO}_5 + \text{NaO}, \text{CO}_2 + 3\text{CaF}$  would produce  $3\text{CaO}, \text{PO}_5 + 3\text{NaF}$ .

Accordingly the ordinary phosphate was converted into the pyrophosphate at a red heat, and after the mixture of the different substances, heat was carefully applied to expel the carbonic acid, and, afterwards, to melt the mass, which wants frequent stirring with a clay rod. After cooling on an iron plate, the mass contained crystals of apatit, which have been observed by Manross, in 1851. The mass was boiled with water in a silver dish, the solution contained, besides fluoride of sodium, much phosphate of soda. The crystals of the fluoride were skimmed off during evaporation, and purified by repeated washing and recrystallization. An analysis showed them to be pure, but the yield was too much below the calculated amount, and the operation too tedious.

An alteration of the mixture to  $\text{CaO} + 2\text{CaF} + 2\text{NaO}, \text{PO}_5$ , thus hoping to obtain  $2\text{NaF}$  and  $3\text{CaO}, \text{PO}_5$ , had a rather less favorable result, and formed the same crystals of apatit:  $3 (3\text{CaO}, \text{PO}_5) + \text{CaF}$ . To obtain this, instead of phosphate of lime, an addition of  $\frac{1}{3} \text{CaF}$  to the first mixture was made, which, however, proved to be only a little more favorable.

Phosphate of potassa substituted for the soda salt yielded so little fluoride of potassium that it could not be obtained pure.

If the above melted mass, instead of being boiled, is extracted by water in a water bath, and the filtered liquor concentrated in it, on cooling, clear crystals, regular octohedrons, are formed, which are hard, and of a nauseous alkaline taste; their spec. grav. at  $25^\circ \text{C.}$ , ( $77^\circ \text{F.}$ ) is 2.2165; at  $25^\circ \text{C.}$  their saturated solution weighs 1.0329, and contains 1 part of the salt in 8.31 water; when saturated at  $70^\circ \text{C.}$  ( $158^\circ \text{F.}$ ) 1 part is dissolved in 1.74 water, and has a spec. grav. of 1.1091. The analysis proved it to be of the following composition:  $3\text{NaO}, \text{PO}_5 + \text{NaF} + 24\text{HO}$ . Boiling of the solution decomposes it, separating fluoride of sodium.

The same salt is obtained by digesting finely pulverized kryolith of Greenland,  $(3\text{NaF} + \text{Al}_2 \text{F}_3)$  in a solution of phosphate of soda with caustic soda; and by evaporating a mixture of the solutions of the medicinal phosphate of soda, caustic soda and fluoride of sodium. Soda, in this double salt, cannot be sub-

stituted by either potassa or ammonia, and chloride of sodium cannot replace the fluoride; but a double salt may be obtained of the formula  $3\text{NaO}, \text{AsO}_5 + \text{NaF} + 24\text{HO}$ , which is isomorphous with the above.—J. M. MAISCH.

*Ann. d. Chem. & Pharm.*, Jan. 1856.

## ON PARAFFIN.

By FRANS. FILIPUZZI.

. Professor Redtenbacher had received from Messrs. White, Young & Co., in Glasgow, a sort of paraffin, prepared from a bituminous slate; it was analysed by the author.

The paraffin was white, crystalline, of a fatty lustre, devoid of taste and smell; spec. grav. 0.861 at  $15^\circ\text{C}$ ., melting point  $55^\circ\text{C}$ . It was wholly dissolved by boiling alcohol, separating on cooling in crystalline masses, which, under the microscope, showed three different shapes: felt-like needles, angular grains, and scales with mother of pearl lustre. From the concentrated mother liquor only, the last mentioned scales separated, which, on repeatedly dissolving and separating them, did not alter their appearance or their melting point, which was at  $45^\circ\text{C}$ .

The first mixed crystalline mass was dissolved in alcohol; on cooling, pearly scales of  $48^\circ\text{C}$ . melting point were obtained; on farther evaporation, the needles intermixed with those angular grains were gained, which could not be separated. By manipulating in this way, nine different specimens were obtained, each varying in the melting point as follows:

| 1          | 2          | 3          | 4            | 5          | 6            | 7          | 8            | 9                    |
|------------|------------|------------|--------------|------------|--------------|------------|--------------|----------------------|
| $45^\circ$ | $48^\circ$ | $49^\circ$ | $49.5^\circ$ | $51^\circ$ | $56.5^\circ$ | $57^\circ$ | $57.5^\circ$ | $58^\circ\text{C}$ . |

The elementary analysis of some of these specimens show them to be composed of isomorphous or polymorphous carburetted hydrogen. The results are—

|   | $45^\circ$ | $49.5$ | $56.5^\circ$ | $57.5^\circ$ | $58^\circ\text{ melt. pt.}$ |
|---|------------|--------|--------------|--------------|-----------------------------|
| C | 85.47      | 85.53  | 85.72        | 85.77        | 85.69                       |
| H | 14.29      | 14.23  | 14.31        | 14.21        | 14.29                       |

By treating it with concentrated nitric acid for several days, paraffin was entirely dissolved, and the solution on diluting with water was scarcely rendered turbid. On distilling, a volatile fat

acid was obtained, which, combined with potassa and treated with sulphuric acid and alcohol, had the smell of butyric ether. The quantity, however, was too small for making a butyrate sufficient for analysis; only butyrate of oxide of ethyle, with its characteristic properties, was obtained.

The remaining acid liquid left a mass on evaporation, which, on dissolving in a little water and evaporating, gave crystals of succinic acid, the silver salt of which was made and analysed.

The author comes to the conclusion, that paraffin is a derivate of fat bodies, formed by a process of reduction.—J. M. M.

*Erdman's Jour.* 1856, from *Sitzungeber d. Wiener Akad.* July, 1855.

### CONTRIBUTIONS TO TOXICOLOGY.

Translated from Buchner's *N. Repertorium* and *Archiv d. Pharmacie* by  
J. M. MAISCH.

#### *On the Inhalation of Sulphuret of Carbon in Caoutchouc Factories.*

In the Paris Académie de Médecine, Delpech read, on January 15th, a notice on the diseases to which workingmen in caoutchouc factories are subject, and which have not yet been described. From his observations Delpech comes to the following conclusions:

1. That those workingmen are subject to severe indispositions, consisting of—

*a.* Disturbance in digestion; anorexia, nausea, vomiting, diarrhœa, constipation.

*b.* Disorders of intelligence; stupidity, loss of memory, extraordinary irritability, unaccountable passion.

*c.* Severe disorders in the functions of the nervous system; headache, vertigo, disturbances in seeing and hearing, impotency, palsy, especially that of motion.

2. That the observance of the above disorders, together with the experiments on animals, permit of the inference, that they are caused by the inhalation of sulphuret of carbon.

3. That the proper remedies ought to be searched for to prevent these maladies.—*Gaz. Med. de Paris*, 1855, No. 3.

*Poisonous properties of Bichromate of Potassa.*

Pirogoff and Zablotzky have made experiments which confirm those of Ducatel and Schindler, made with men, and of Jaillard undertaken with animals. The results are:

1. Bichromate of potasssa belongs to the acrid metallic poisons, in the same class with arsenious acid and corrosive sublimate.

2. From 1 to 6 grains given only once, cause disorders of the digestive organs, and sometimes death.

3. The anatomico-pathological changes are analogous to those caused by arsenious acid and sublimate.

4. The best antidotes, as long as vomiting has followed, are bicarbonate of soda and magnesia; the treatment afterwards is analogous to that of poisoning with acrid substances.—*Ann. Méd. de la Flandre, Jour. de Pharm. d'Anvers, Juin 1855.*

*Sulphuret of Iron for Chemico-Legal Examinations.*

By Dr. RUD KEMPER and Fr. MEYER.

The authors have tried to solve the question whether a pure sulphuret of iron, *free of arsenic*, is necessary for the generation of sulphuretted hydrogen in chemico-legal analysis? The gas of 2 oz. of sulphuret of iron was washed and conducted into a solution of 8 grs. chloride of mercury in 1 oz. hydrochloric acid; from thence, after having been washed again, into 3 oz. nitric acid of 1.20 specific gravity. The sulphuret of mercury was free of arsenic; not a trace of it could be detected in Marsh's apparatus.

The nitric acid, after evaporation, was treated in the same apparatus and not a trace of arsenic was found. The sulphuret of iron, however, the authors have shown to contain arsenic. They accordingly come to the conclusion that the sulphuret of iron, obtained by melting together iron filings and sulphur, and which contains arsenic, yields a sulphuretted hydrogen free of arsenic, which may be used in chemico-legal examinations.—*Archiv der Pharm. April, 1856, 15—17.*

*Poisoning by Oil of Turpentine.*

Mr. Marchal, in the Academy of Paris, on Dec. 10, 1855, described a case of poisoning occurring to a woman who had

lived in a newly painted room for several days. The first symptom was colic, but soon she became very uneasy; her face deathly pale; eyelids cyanotic; eye-balls fallen back; lips hardly moveable; breath cold; voice feeble; limbs cold; pulse almost imperceptible, not frequent; seeing weakened and dimmed; she had her reason and felt herself dying. Energetic applications of stimulants, internally and externally, animated her, and after several returns of the hyposthenic crisis, she recovered after the lapse of a month. This toxication could not have been caused by the fixed white lead; that it was caused by turpentine, was proved by Marchal in several experiments. The vapors of spirits of turpentine are a hyposthenic poison which is to be treated by stimulants.—*Gaz. Med. de Paris*, 1855, No. 52.

### *Poisoning by Chloroform.*

Ricord extirpated the testicle of a strong man, 38 years of age, and with all caution let him inhale a very good chloroform. After half a minute narcosis had completely set in without convulsions and the operation was performed. After the chloroform had been taken away for some time, all at once the pulse ceased to beat, respiration stopped, deathlike paleness overcame the patient, who turned the eyes upwards and seemed to be dead. Instantly Ricord threw himself over him, and putting his mouth to that of the patient, blew air in, which he expelled again by compression of the thorax. After this had been done twice, pulse and respiration returned; the color improved and after half a minute the patient commenced to speak. Ricord makes the following reflections:

1. In consequence of hemorrhages or violent emotions, syncope not seldom occurs after these causes cease. Just the same with chloroform. 2. The difference of the action of chloroform depends less on the purity of the article, as Dédillot asserts, but, like with other medicines, from idiosyncrasis. 3. The above treatment of poisoning by chloroform is, according to Ricord, who often had resort to it, safer and quicker to apply than any other counter-poison.—*Jahrb. d. ges. Med.*, lxx, No. 7.

### *Poisonous properties of Brine.*

In the session of the Academy of Sciences of Paris, on



July 2d, Prof. Reynal read a paper in which he shows that the brine—the liquid residue from salted meat and fishes—which in France is used by the countrymen in place of table salt, acquires poisonous properties after having been kept for some time. More than 100 experiments have led him to the following conclusions :

1. Three or four months after it has been made brine becomes poisonous.

2. One or two decilitres is poisonous to dogs ; in much smaller quantity it causes vomiting.

3. The addition of this liquid to the vitals, even in small quantities, if continued for some time, may cause death.

4. But the salt prepared from the brine may be used without danger ; the poisonous principle remains in the liquid.—*Jour. de Pharm. d' Anvers, Aout., 1855.*

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#### ON THE PREPARATION OF MORPHIA.

Translated by S. S. GARRIGUES from T. MUCK.

In the “*Zeitschrift für Pharmacie*,” 1854, No. 10, a process for the preparation of morphia was communicated by G. Ramdohr, which appeared to have an advantage over previously proposed methods in its brevity and simplicity. According to this process the opium is extracted by alcohol of 60 per cent. ; to the tincture thus obtained carbonate of ammonia was added, the mixture at the same time being well shaken together. After standing ten minutes, the narcotin separates in colorless crystals free from morphia ; from the tincture which was separated from the narcotin, the morphia crystallizes in shining crystals, more of which are obtained on the further concentration of the mother liquors.

Muck, to test this process, took 3 ounces of opium and by strictly following the directions, obtained nearly 51 grains of nearly white narcotin. This he dissolved in liquor potassa with the aid of heat, and on saturating the alkaline solution with sulphuric acid he obtained a small precipitate of morphia, which on drying weighed 0.250 grains. From the solution separated from narcotin, after standing a week, only a few crystals had separated, and their number had increased very little after another

week's standing, on which account the entire liquors were evaporated down to one-sixth and again allowed to stand in the quiet; at the end of a week very little had separated. At this stage of the process Muck lost his patience, thinking that he might have to wait some weeks longer for an increase in his crystals of light brown morphia; he therefore evaporated to the consistence of extract, which was treated with acetic acid and water, and precipitated with ammonia, the product being over two drachms of nearly pure morphia, which proved that the opium used was of a good quality. There appeared in the same Journal, 1855, No. 6, during the time Muck was making these investigations, an article from Plener, who also speaks of the uncertainty of this process of Ramdohr's. He obtained a yellowish precipitate of narcotin, and a dark brown morphia containing narcotin. By the evaporations of the mother liquors Plener obtained a few more crystals; their number did not pay for the trouble of separating them from the extractive matter. Plener does not mention whether he found the narcotin contained morphia, and Muck could not strengthen the statement that the morphia contained narcotin; for according to Ramdohr's process he obtained only a small portion of morphia, although the opium was of the best quality.

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#### ON RHATANY ROOT.

By DR. SCHUCHARDT.\*

The appearance of a small parcel of a peculiar kind of Rhatany Root in the London drug market, in the autumn of 1854, gave me occasion to make a comparative investigation of it with the well-known Rhatany Root of commerce.

The newly imported drug was, as is usual in English wholesale trade, distinguished with the name of the place of exportation, and called *Savanilla Rhatany*, or, as in more recent importations, [New] *Granada Rhatany*.

The pharmacopœias of Europe, with the exception of the French, sanction the use of the root, exclusively of *Krameria triandra*; while the *Codex* admits the root of *Kr. Ixine*. The root of the first plant is generally known under the simple name of *Rhatany*

\* Botanische Zeitung, 3 and 10 Aug., 1855.

Root (*Radix Ratanhiæ*;) that of the second plant is distinguished by French druggists as *West Indian Rhatany* (*Radix Ratanhiæ Antillarum*;) under which name, brief and somewhat superficial descriptions of it may be found in some scientific journals. The most detailed account, referring, however, only to its external appearance and characters, is that given by Guibourt (*Dictionnaire des Drogues simples et composés*, 1829, tome iv. 376), as derived partly from his own investigation of specimens found in French commerce, and partly from observations made on the spot by Tussac, who published a description of it, with a figure, in his *Flore des Antilles*.

Besides this West Indian Rhatany, which almost always occurs in trade *per se*, we find sometimes among ordinary Rhatany other roots, evidently derived from different species, though belonging to the same genus. *Krameria argentea* and *Kr. linearis* have been named as the origin of these roots. I have not, however, yet succeeded in distinguishing with certainty these latter roots, although with a favorable chance for doing so, having had within a few months as much as 8000 lbs. of genuine Rhatany before my eyes, with liberty of searching it over. I may therefore pronounce the admixture of those two roots as, at all events, of but rare occurrence. An intentional or fraudulent adulteration of the drug is not easily carried out, on account of the characteristic color which the genuine rhatany possesses. Martiny has, however, noticed such an one. He found among some genuine rhatany, pieces of a yellowish-red root, having a rough uneven surface, a clean fracture, and a soft wood. Its origin is unknown, and he describes it briefly as *Radix Ratanhiæ spuria*.

*Krameria triandra*, discovered by Ruiz and Pavon, grows in Peru and Bolivia, half-way up the western slopes of the Cordilleras. It is exported from Lima chiefly to the ports of Europe. It does not appear that we are at present acquainted with any further distribution of this plant on the South American continent.

*Krameria Ixine* was first found by Löffling on the continent, so is by no means restricted to the Antilles. But its exportation takes place from Martinique and Guadaloupe, whence it is sent to France.

As the port of Savanilla ( $12^{\circ}.2$ ) is in New Granada, at the mouth of one of the lateral branches of the river Magdalena, which flows into the Caribbean Sea, it is situated in a part of America where *Krameria triandra* has not yet been found. This circumstance justified the supposition that the Savanilla Rhatany might be derived from another species; a supposition which, after a careful comparative examination of a quantity of 180 lbs. of this drug, I am warranted in saying has become a certainty.\*

Both kinds of Rhatany, namely that from the ports of Peru and that from Savanilla, have hitherto been exported in serons of 180 to 200 lbs.

For the sake of brevity, I shall designate the Peruvian root *Payta Rhatany*, a name under which it figures in the English

\* With regard to the botanical distribution of the genus *Krameria*, we find in Asa Gray's *Genera of the Plants of the United States*, ii. 225, some short remarks under the head of *Kr. lanceolata*, Torrey. As far as I have been able to gather, there are at present fourteen well-determined species of this genus, viz:—

- 5 from Brazil . . . *Kr. glabra*, Spreng. *Neue Ental.*, 2, p. 157,  
     " *grandiflora*, A. St. Hil. *Flor. Bras. merid.*,  
         tom. ii p. 72, t. 97.  
     " *ruscifolia*, A. St. Hil.  
     " *tomentosa*, A. St. Hil.  
     " *Beyrichii*, Hb. Lehm.
- 3 from Peru . . . " *triandra*, Ruiz et Pav. *Flor. Peruv.*, i., tab. 98.  
     " *linearis*, Ruiz et Pav. *Flor. Peruv.*, i., tab. 94.  
     " *cuspidata*, Presl. *Reliq., Haenk.*, ii. 103.
- 3 from Mexico . . . " *secundiflora*. *Flor. Mex.*, ic. ined.  
     " *pauciflora*. *Flor. Mex.*, ic. ined.  
     " *cistoidea*. Hook. in App. ad B. Voy., t. 5.
- 2 from the West Indies " *cytisoides*, Cavan. *Id.* 4, t. 590.  
     " *Ixine*, L., p. 177 (occurs also near Cumana, in S. America.)
- 1 from Florida, Texas, } " *lanceolata*, Torrey. Asa Gray, *Genera*, ii. 225,  
     and Arkansas        } tab. 185, 186.

The species called by Martius, in his *Pharmacognosie*, *Kr. argentea*, I have been unable to find.

Aug. St. Hilaire, who usually enters so much into detail, mentions nothing about the use of the roots of the Brazilian species; and De Candolle, in speaking of *Krameria triandra*, only says that the root is official. Tussac gives a little more information in his *Flor. Antillarum*, in which work (tab. 15, fig. 10, 11) he figures an entire root and also a portion of a root of *Kr. Ixine*; he also gives some account of its uses in the countries where produced. Asa Gray mentions (l. c.) that the root of *Kr. lanceolata*, Torrey, frequently three feet long, is often substituted in the south of the United States for the root imported from Peru, but he gives no description of it. In the Flora of North America of Drs. Torrey and Asa Gray, we find, however, when speaking of the properties and effects of the Peruvian Rhatany, that "the roots of *Kr. lanceolata* are endowed with similar properties as the roots of *Kr. triandra*." I am indebted to the verbal communication of my friend Dr. Matthes for the information that during a residence of many years in Texas, he had known but few instances of the root of *Kr. lanceolata*, there a common plant, being used in medicine.

official lists of imports; the new drug I shall call *Savanilla Rhatany*.

The opinion of Mettenheimer (*Archiv der Pharm.*, 53, II. 180) that it is almost impossible for *Radix Nanary* to come into trade as a spurious rhatany, as supposed by Wiggers, I perfectly agree with. The difference between the two roots is too striking not to be observed at once.

The seron of *Savanilla Rhatany* which I examined, consisted entirely of one sort; while in most serons of *Payta Rhatany* I have observed that, apart from the difference which might occur in the same root when collected at different times of the year, or when exported from different places, it varied very materially in the same seron, young and old root-stocks differing greatly in the color, size, number, and length of their roots, being all mixed together.

Druggists are in the habit of distinguishing two sorts of *Payta Rhatany*, one sort *stumpy* or *short*, and another designated as *long*. If the root-diggers bestow the needful care in removing the roots from the soil, the *long* variety of the drug will be obtained; while in the *short*, *stumpy*, or *chumpy* form, it is plainly indicated that the shrubs have been torn from the soil with force, and that sufficient regard has not been had carefully to extract the long, creeping root. The *long* *Rhatany* is preferred to the *short* or *stumpy* variety. The *stumpy* sort occurs in pieces, from the lower part of which proceed numerous roots, some running in a perpendicular, but more in a tolerably regular horizontal direction. The aerial stem varies very much in length and thickness, as do likewise the length, thickness, number, and direction of the roots. In most cases, the stem of the *Rhatany* plant is cut off a few inches above the ground; its thickness varies from  $\frac{1}{4}$  of an inch to 3 inches; it is not always perfectly cylindrical, but frequently irregular and knotty. One seron contained roots evidently collected with very little care, since to some of them, branched or simple stems from 1 to 2 feet long were still attached. The longest aerial stem which I had the opportunity of seeing, measured 26 inches. Another and upright stem whose base of  $3\frac{1}{8}$  inches in diameter, branched into three nearly equal shoots, was covered here and there, and especially on its broken ends, with a grey epidermis, upon which, besides some blackish

*Verrucarie*, there was a dark-fruited *Lecidea*, with a green thallus. Another seron contained principally the roots and stems of younger plants, which, at scarcely one inch above the ground, had divided into numerous branches and twigs, the latter clothed with a dense covering of long, silky, white, adpressed hairs. The foliaceous, thin, brittle, brown bark, is easily detached. The youngest branches still retained here and there the small oval leaflets, invested with the same covering of hairs as the branches. According to the testimony of travellers, the rhatany plant is easily recognized, even at a distance, not only by its bright red flowers, but also by the silky, shining pubescence of the leaves. Under the microscope this pubescence is seen to consist of densely-crowded, long, one-celled, colorless, thick-walled, hollow hairs.

According to the age of the plant, we find a difference in the external appearance, and more or less in the internal structure, of its stem—less so, however in the roots, which, to us, are of more importance.

The aerial stem of the young plant is covered with a reddish-brown, rough, but slightly wrinkled bark, which closely adheres to the wood. A transverse section shows the layer of bark strongly distinguished by its internal red color from the yellowish white wood. In older stems the bark assumes a somewhat different color from a mixture of dirty brown, but the wood remains the same. In old stems, however, having cortical matter to the thickness of a quarter of an inch, a very different external appearance is presented, such, in fact, as we have noticed on the trunks of old oaks. Deep horizontal and perpendicular fissures divide the bark into a number of irregular elevated portions. The perpendicular fissures are broader and more open; but less deep than the horizontal, which sometimes penetrate down to the wood of the tree. The connexion between wood and bark is usually very weak; it therefore frequently occurs that in handling the roots portions of the bark break off. It often happens that a seron of 180 lbs. contains twenty pounds of loose bark. As the active principles of the root-bark are, to some extent, present in the bark of the stem, it formerly occurred that the [stem-]bark was sold by itself or mixed with root-bark. Martius and other writers on *Materia Medica* mention this; it seems, how-

ever, that the bark has not been a regular article of trade, but merely introduced as an experiment.

As regards the root proper, which in its native country is used for the same purposes as with us, we cannot, like many writers on *Materia Medica*, draw a distinction between the structure of the principal and secondary roots. From the root-stock issue a number of roots, which shoot in different directions, but with a tendency to assume very soon a more horizontal course; they are undulating, cylindrical, and, as before remarked, exceedingly variable in length, according to age and locality. The roots of the stumpy sort of rhatany never equal in length those of the so-called *long* sort,—a natural consequence of the greater care bestowed in the collection and packing of the latter.

It appears that upon the spot, neither the young nor the old plants are specially chosen for obtaining the long roots. The roots required in this state are extracted from the ground with some care; each bunch while fresh is separately doubled in two, like sarsaparilla, and then, after awhile, again bent in two, a bundle being thus formed, round which a long root is twisted a few times. This rather careful plan of packing obviates the unavoidable splitting off of the bark and the breaking and bruising of the roots that is noticeable in the stumpy form of the drug. The length of these small bundles varies according to the strength and the number and length of the roots of the shrub. I have seen them from seven to fourteen inches long, and weighing from three to ten ounces. A stem  $1\frac{1}{2}$  inches thick, and three inches high, with three roots measuring respectively twenty-six, twenty-nine, and fifty-nine inches in length, and three-quarters of an inch at the thickest part, had been formed into a bundle ten inches long, which was tied together by the ends of their longest root, which ends branched off at a distance of fifty inches from the stem.

When one can examine large quantities of *Payta* and *Savanilla* Rhatany, it is certainly no difficult task to distinguish the one from the other; but it is somewhat less easy to discover single pieces of the latter when mixed with *Peruvian* Rhatany. I think it therefore not superfluous to give a description of the new Rhatany, especially since the most copious works on *Materia Medica*, as Thomson, and even Pereira, in his new edition, are

wholly silent on the subject. The short notices which occur in German works on *Materia Medica* and Pharmacy, describing roots found mixed, either accidentally or intentionally, with genuine Rhatany, are very brief and insufficient. Moreover, they say nothing about the internal structure of these roots, and nothing, of course, about the drug now under discussion. The only anatomical examination of Payta Rhatany hitherto made, is that of Berg, the result of which is published in brief in his work on *Materia Medica*.

As regards external appearance, the stems of the *Savanilla* Rhatany, are never so knotty and irregularly rounded as those of the old kind of Rhatany, but are more symmetrical and slender, more regularly cylindrical, and generally shorter. Its roots (we cannot speak of one principal root,) as to thickness, are as different as those of the stumpy variety of Payta Rhatany, but never so long as those of Peruvian Rhatany sometimes are. Their anatomical structure readily admits of their being broken, without the bark thereby splitting off. Pieces of root, from four to at most ten inches long, are the most frequent, and these with the root-stocks before described, to some of which are attached roots of from four to six inches, form the contents of the seron. The roots are marked with shallow, undulated furrows, which are near each other, but not always parallel. The roots are also marked, often all round, by deep narrow, transverse cracks, which sometimes even lay bare the wood. The bark is united to the wood by a rather broad inner cortical layer, and adheres to it with firmness. I shall revert to this rather important distinctive point when I describe the anatomical structure of the root.

It is difficult, in fact almost impossible, briefly to define the color of *Savanilla* Rhatany. It is a singular mixture of different shades, a mixture of cinnamon-brown and violet-red, dusted, as it were, with a fine leaden grey. If slightly rubbed with a soft substance, the bark assumes a peculiar, almost garnet-red lustre, which widely differs from the weaker and duller resinous appearance of Peruvian Rhatany. The adhesion of the bark to the wood is so strong in *Savanilla* Rhatany Root, that when broken in pieces, the bark always remains attached, which is never the case in Payta Rhatany, where, if so treated, the bark splits or



peels off. The color of the wood is yellowish-white, almost alike in both roots; its fracture in both the old and new sort of Rhatany, and in old as well as young roots, is of the same character, namely, short-splintery [*hurzsplitterig*.] The fracture of the bark, on the other hand, is very different in the two sorts, as might be expected from the dissimilar texture of the layers. The bark of Payta Rhatany has a fibrous fracture, arising from the nature of its inner layer; the middle and outer layers break more evenly. The bark of Savanilla Rhatany has a nearly even fracture, its outer and middle layers presenting a somewhat powdery appearance.

The bark of Payta Rhatany, from its toughness, cannot be reduced to powder without considerable labor, but the bark of Savanilla Rhatany can be powdered without any particular difficulty. The powder of the latter is of a purplish red, resembling very much that of tormentilla root; while the powder of the root of Peruvian Rhatany is easily distinguished by its tint of brownish-red and cinnamon.—*London Pharm. Journ. Aug. 1856.*

(To be continued.)

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#### RESEARCHES ON ALOETINE.\*

By M. E. ROBIQUET.

The subject with which I am now about to entertain the Academy, is not perfectly new, and it has already had long and fruitless investigation at my hands.

Ten years ago, I published my first work on the juice of aloes, and I was enabled, among other results, to prove that:—

1. This juice exists in the different varieties of aloes, in the state of colorless liquid, acquiring the appearance and chemical constitution which we are acquainted with, in consequence of an absorption of oxygen.

2. Socotrine also contains a proximate principle, to which I gave the name of aloëtine, formed of carbon, hydrogen, and oxygen, without a trace of nitrogen, but which could not be crystallised.

I shall only speak from memory of chloralise, and chloraloïle, the chlorated derivatives of aloëtine, and only because, their ex-

\* Read to the *Académie de Médecine*, Feb. 26, 1856.

istence having been disputed, I have not taken the trouble to place crystallised specimens of them before the Academy on the present occasion.

In 1851, Messrs. Smith, of Edinburgh, were enabled to extract from Barbadoes aloes a crystallisable body to which they gave the name of aloïne. The process followed by these chemists consisted in triturating aloes with sand, removing, by lixiviation, every thing that is soluble in cold water, and evaporating *in vacuo*, under the influence of a temperature of 50° to 60° C. (122° to 140° F.)

I was no little surprised to learn this result, for two reasons: in the first place, this mode of preparation was one of the first to occur to my mind, and I had applied it in vain to Socotrine aloes; and, in the next place, being of opinion, in common with all the authors of treatises on *Materia Medica*, that transparent and vitreous Socotrine aloes is the best of all kinds, I had not thought of using Barbadoes or hepatic aloes. Being thus punished for my excessive confidence in the statements of others, I very soon returned to my work. My first care was to repeat Messrs. Smiths' mode of preparation on Barbadoes aloes, and on vitreous Socotrine aloes. In the first case, I obtained crystals; in the second, an amorphous mass, without any crystalline appearance.

I then dissolved a similar quantity of Barbadoes aloes in boiling water, and evaporated the solution to dryness, on a sand bath, in the open air. It became transparent and vitreous, that is to say, quite similar to Socotrine aloes; but, as soon as this transformation was accomplished, it was impossible to extract the smallest trace of crystals from it.

The mystery was then cleared up, and I arrived at the conviction that:

1. All the kinds of juices of vitreous and transparent aloes (Socotrine aloes, Cape aloes, &c.) have undergone the action of heat, and their crystallisable principle is metamorphosed into an amorphous substance, which is ordinarily called resin of aloes, but which is no other than aloëtine, which has become, by molecular change, amorphous aloëtine, insoluble in water.

2. All the kinds of opaque aloes with a waxy fracture were

obtained by dessication in the open air, and without the aid of heat; they all contain crystallisable aloëtime.

Messrs. Smiths' process of preparation is very simple in principle, but, in practice, it is troublesome to evaporate, *in vacuo*, large quantities of liquid, and, moreover, the yield is very trifling. I endeavored, therefore, to overcome this difficulty, and, after some failures, I arrived at the following method, which gives about 15 per cent. of product.

*Preparation of Aloëtime.*

Distilled water is boiled for an hour, in order to expel the air, and, when cold, 2 kilogrammes are poured on 1 kilogramme of Barbadoes aloes in powder, which is kept ready in a dish. By agitating rapidly, the solution is effected in a few minutes; the dish is covered as accurately as possible, and left to repose for about a quarter of an hour. The liquor must be decanted into a conserve glass, of such a size as to exactly contain it; a little ether is poured in, in order to expel the air as much as possible, and to prevent mouldiness; the lid is immediately fitted on, and carefully luted. It only remains to place this vessel in a cool situation, and to leave it to itself for a month. It is then opened, and, after having separated all the portion still remaining liquid, we find its interior lined with a compact mass, and, as it were, covered with stalagmites. These concretions are no other than a mixture of amorphous aloëtime, foreign earthy matters, and crystallisable aloëtime.

Now, as the latter is very sparingly soluble in cold water, and much heavier than the impurities which accompany it, it is easy to separate it, mechanically, by simple levigation.

The crude aloëtime is under the form of yellowish and radiated crystalline grains, giving way between the teeth, like wax, and rapidly turning brown, in contact with nitric acid, and even, in damp air. To purify them completely, they must be washed in alcohol of 56 centesimal degrees (22° Beaumé,) until this liquid takes a straw-colored tint, without any red in it, and then crystallised five or six different times in alcohol of 86 per cent. (36° B.)

Dr. Pereira has described, with much care, a new variety of Socotrine aloes, recently imported into England, and which is no other than the natural juice of the plant which has undergone no

manipulation. It is a chestnut brown liquid, with a powerful odor of black currant, in which float a great number of silky crystals of aloëtime.

It would appear, at first sight, that nothing is easier than to prepare aloëtime from this natural juice: simple pressure between folds of bibulous paper, and several crystallisations in alcohol, ought to be sufficient. But this is not the case, and the portion of this juice which has become altered in the air, suffices for preventing the crystallisation of the aloëtime from remaining intact; at any rate, a large portion is lost. The process which is the least disadvantageous, is the following:—the liquid juice of Socotrine aloes is diluted with distilled water, to which 10 or 12 drops of liquid ammonia have been added per litre. The resinous portion of the juice is first dissolved by the alkali, and, if we operate very quickly, the portion still unaltered may be separated by filtration. Two or three crystallizations in alcohol are then sufficient for arriving at complete purification. However, this method, however rapidly we operate, never gives more than 4 or 5 per cent. of aloëtime.

Pure aloëtime occurs under the form of prismatic needles, of a fine sulphur yellow. At the temperature of  $10^{\circ}$  C. ( $50^{\circ}$  F.) 1 part of aloëtime requires, for its solution, 10 parts of water, 2 parts of alcohol, of  $36^{\circ}$  B., and 8 parts of ether of  $66^{\circ}$  B. It is impossible to determine, exactly, its solubility at the boiling points of these liquids, because heat alters it more or less profoundly.

Owing to its sparing solubility in water, aloëtime has scarcely any taste, but its characteristic bitterness is speedily developed.

The mucilaginous pulp of the leaves of aloes contains a peculiar matter, which is colorless in the plant, but which rapidly acquires a violet red color in contact with the air. This may easily be perceived by suddenly tearing one of these leaves, when the central part rapidly becomes colored. This substance, whatever may be its nature, accompanies aloëtime in its last purifications; I have ascertained that to it was due the property of being colored red by nitric acid, attributed by Messrs. Smith to aloïne.

Without heat, pure aloëtime should color nitric, sulphuric and hydrochloric acids, of a citron yellow. When it is boiled for about half an hour, with concentrated nitric acid, we obtain a

solution which, treated with cold water, deposits chrysammic acid, in the form of a greenish yellow powder, easily recognisable by the magnificent violet tint which it communicates to ammonia. These reactions with cold and boiling nitric acid are characteristic.

After having taken so much trouble to isolate the crystallisable principle of aloes, I thought I at least should find recompense in the energetic action of aloëtime on the organism. I requested my friend, Dr. Vigla, physician to the Maison de Santé, to be kind enough to make some experiments in this respect, cautioning him that the new substance should act with ten times the energy of ordinary aloes. Here, I was completely deceived in my expectation; the doses were carried timidly to 0.05 grammes, and produced no effect; then, successively, 0.25, 0.50, and 1 gramme at a time were administered. The observations were to the number of twenty-three.

Of these twenty-three observations, sixteen had a completely negative result; in two others, the laxative effect was well marked, and, in the remaining five, the therapeutical action was very slow, and very doubtful. All these observations were made with the greatest care by Dr. Vigla, who devoted himself with a good grace, for which I cannot thank him sufficiently, to the experiments which I desired to make, and varied several times the mode of administering the aloëtime. This substance was given to the same patients, sometimes under the form of pills, sometimes in that of powder, or in alcoholic solution; the results were always identical. In glancing over the list, we remark the observation No. 4, in which a patient, who was easily influenced by 4 grammes of calcined magnesia, was insensible to the action of aloëtime, then submitted to the action of magnesia a second time; he was again purged. Observations 8 and 16 are analogous; only, instead of magnesia, castor oil, or German brandy, was used as a comparative test. I was curious to try on myself a still more decisive experiment. I weighed exactly 2 grammes of aloëtime, and divided it into 2 equal parts; I took the first part without subjecting it to any manipulation: there was no result. The second gramme was heated to 100° C. (212° F.) until it was converted into a small amorphous and translucent mass, with no appearance of crystallization. When thus transformed, I

took it eight days after the first dose; the purgative action was not long delayed, and it was arrested only when the digestive canal was completely evacuated.

From all these facts, it results that aloëtime is the chemical and crystallisable principle of the officinal juice of the aloes, that it does not possess the purgative property of aloes, and only recovers it when, by the action of the air or of heat, it has become amorphous and uncrystallisable. It occupies the same position as that which mannite does with regard to manna, and santonine to semen-contra, and it will also be the same with cathartine, the proximate principle of senna, when it has been properly isolated, for experiment has already taught us that a very long continued decoction of senna produces a liquor which is not so active as the simple infusion, having, however, exhausted the plant of all the parts soluble in water.

The excessive bitterness of aloëtime induced me to try its action in well-characterised intermittent fevers, and it seemed to me that it would be possible to increase its efficacy by associating it with a tonic, such as pulvis ferri (fer réduit.) Five cases of intermittent fever are at present under treatment, and the first results obtained enable us to perceive the efficacy of the new febrifuge. The doses which have been given are from 10 to 20 centigrammes per day for children, and from 50 centigrammes to 3 grammes for adults. The compound powder contains 1 part of aloëtime, and two parts of pulvis ferri. In all the patients the appetite was restored, and the fits diminished each time in intensity. As the cure is not complete, and as, in such cases, we cannot be too careful in drawing conclusions, I will now confine myself to taking data for this new febrifuge treatment, merely asking the Academy's permission to communicate the result of my observations, when the season and circumstances enable me to apply this kind of experimentation on a scale of sufficient magnitude to prevent the possibility of doubt.

In conclusion, it results from the facts contained in the present memoir that:—

*In a therapeutical point of view:—*Aloëtime, the proximate principle of officinal aloes, should not be regarded as a purgative, or, at least, as a very slow and doubtful one.

The opaque variety of aloes with a waxy fracture, such as Bar-

badoes and hepatic aloes, are the best; they purge efficiently. and without causing those intestinal pains which always accompany the administration of vitreous and transparent aloes, such as Socotrine aloes, Cape aloes, &c.

Pure aloëtime becomes purgative when it has been altered by the action of air and heat. Associated with pulvis ferri, it will probably be of great assistance in the treatment of fevers.

*In a chemical point of view* :—Aloëtime is a crystallisable substance formed solely of carbon and oxygen. It may be obtained by very easy processes, but only with the juice of Socotrine aloes, or with those opaque extracts which air and heat have not altered so as to render all their crystals amorphous.

It is aloëtime which gives, by the treatment with chlorine, the crystallisable compounds to which I have given the names of chloralise and chloraloële.

*London Chemist, from Journal de Pharmacie, April, 1856.*

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#### TESTING FOR STRYCHNIA, BRUCIA, &c.

By MR. JOHN HORSLEY.

I beg to make a few observations in reference to the poison strychnia, the properties and effects of which have recently been discussed during the celebrated trial of Palmer. In doing this I wish to be understood as confining myself strictly to the chemical manipulation of strychnia.

It is because I have had many opportunities of noticing the very strong affinity which exists between chromic acid and strychnia, that I propose the former for the precipitation of the poison in preference to the alkalies, provided always that the solution to be operated on is more or less pure.

Before proceeding further in this matter allow me to premise that at your last meeting I presented a paper, detailing a new method of testing iodine, as well as for *manufacturing* it from prepared kelp lyès by *precipitation* with a certain test liquor. But as it would have been inconvenient for me to have attended the Glasgow meeting, I will here exhibit, with your permission, a sample of iodine thus prepared, as well as the liquor from which it was precipitated, and the test liquor used for that purpose. I may observe that this precipitating liquor is composed of one

part bichromate of potash dissolved in fourteen parts of water, to which is afterwards added two parts in bulk of strong sulphuric acid.

The circumstances connected with Palmer's trial induced me to make a series of experiments, and, as I possessed a large quantity of the just-named precipitant, I resolved to try its effects upon a solution of strychnia, which, to my surprise, was entirely precipitated in the form of a beautiful golden-colored and insoluble precipitate.

It will form a beautiful experiment to witness the complete *decolorization* of a solution of either the chromate or bichromate of potash by the gradual addition of a solution of the acetate of strychnia, chromate of strychnia being immediately precipitated; and, if the experiment be well conducted, scarcely a trace of bitterness will be left in the supernatant or filtered liquor.

I do not, however, claim as an *original* discovery the use of a chromic salt and an acid liquor, because they have been already suggested by Professor Otto, and have been in use for some time; but the *point* to which I wish to call your attention is the *essential difference* in the mode of their application. In short, such is the extreme range of sensibility which I have attained, that it is no vain assertion on my part in saying that it is just as much out of the power of any human being to define its limits, as it would be for a person to count the sand on the sea-shore, or to measure the drops of the ocean surrounding it; and without an experiment in point, you would not, perhaps, believe it possible.

I will therefore take say thirty drops of this solution of strychnia, containing half a grain. I will dilute it with four drachms of water. I now take this dropping tube, and charging it with a solution of bichromate of potash, I will drop in say six drops. You observe that I have no sooner added *one* drop than crystals begin to form at the bottom; and on the addition of five drops more, and stirring the mixture, the decomposition is complete. I have now split up the half grain of strychnia into *millions* of atoms of minute crystals, each of which, could they be separated, would as effectually demonstrate the chemical characteristics of strychnia as though I had operated on a pound weight of the same. I have now to show you the chemical reaction with those



crystals. I will let fall into this evaporating dish a *drop* of the liquor containing the chromate of strychnia, and having shaken the vessel so as to spread out the drop as much as possible, I will project on it from time to time a drop or two of strong sulphuric acid, when the beauty and intensity of the effect will be strikingly apparent. This may even be shown on a still more refined scale, by taking a crystal or two on the point of a pen-knife, transferring it to the edge of an evaporating dish, and touching the spot with a drop of sulphuric acid.

This chromate of strychnia may be obtained in the amorphous state from the neutral chromate of potash; in the nacreous or irregular crystalline state from the bichromate; and lastly, which forms a more striking peculiarity, in the regular crystalline condition—viz., first in the form of fine spiculæ, and next of beautiful small cubic crystals, which completely stud the sides of the glass vessel when a weak *acid* solution, such as recommended for the precipitation of iodine is used, but of course, considerably diluted. This latter peculiarity is very decided, and characteristic of strychnia.

Experiment: 30 drops of solution of acetate of strychnia, 8 drachms of water; then add 20 drops of the acid solution of bichromate of potash; let it crystallize without shaking.

I have taken some pains to ascertain in what respects other substances may *clash* with this method by producing a more or less similarly colored salt, and, as far as I have had opportunities of judging, there appear to be only *two*—viz., chromate of brucia and chromate of lead. But I conceive that any Chemist, well acquainted with their specific characters, can *easily distinguish* them from chromate of strychnia.

Both chromate of strychnia and chromate of brucia are very susceptible of *discoloration*—that is, becoming brown or dark-colored by exposure to the sun-light—a property not possessed by chromate of lead.

Chromate of strychnia becomes changed to a deep *purple*, and then to a *violet* and *red* when touched with a glass rod dipped in sulphuric acid. Chromate of brucia, on the contrary, shows only an *orange-red* color, without any shade of blue or violet. Again, chromate of brucia is so much more soluble than

chromate of strychnia, that no *crystals* can be obtained by precipitation with the weak acid liquor previously alluded to.

Chromate of lead never can (except at first sight) be mistaken for either chromate of strychnia or brucia, because, first, it is always in the amorphous or powdery state; and secondly, no color is developed on the addition of sulphuric acid.

It is therefore evident that the production of chromate of strychnia in one or other form, and its reaction with sulphuric acid, renders it a *faultless* and *invaluable* toxicological method, and enables us to pronounce with certainty respecting the alkaloid, since no other comports itself in a similar manner.

In reference to the precipitation of strychnia, it would appear, judging from the <sup>very</sup> high equivalent of strychnia (348), that a very small quantity of the chromic salt is necessary for that purpose, as may be verified by experiment. Every three-and-a-half out of four parts of chromate of strychnia may be said to be the proportion of real strychnia.\*

It has been asserted since the trial, that the non-detection of strychnia in the body of John Parsons Cook, was owing to the antimony which was known to have been taken by the deceased having somewhat interfered with the tests. Such a supposition is, in my opinion, truly absurd. Nothing, I conceive, can more incontestably disprove this fallacy, than either of the following additional new tests for the detection of strychnia.

If we mix one part of a saturated solution of the yellow cyanide of potassium (containing twelve grains to each drachm of water) with two parts of a solution of the acetate of strychnia, or if we take say thirty drops of the solution of strychnia diluted with sixty or ninety drops of water, and then drop in *one* minim only of the solution of the ferrocyanide of potassium, and agitate the mixture for a few seconds, an abundance of minute yellowish-white silky crystals of the ferrocyanide of strychnia is formed. This is a very beautiful compound test, and is best shown as follows:—I first take a very small portion of powdered protosulphate of iron, and laying upon it a little of the dried ferrocyanide

\* It may be a point for consideration how far chromate of potash in solution may be useful in neutralizing the effect of any of the free strychnia existing in the stomach.

of strychnia, drench them both with a drop of water—the characteristic deep blue of the iron is first developed. This must now be *discolored* by one or two drops of strong sulphuric acid, and next a minute portion of powdered chromate of potash stirred in—the usual purple and violet color of strychnia will then readily appear. The same effect is produced with the red prussiate of potash.

The next test is the decolorization of a solution, the ammonia sulphate of copper, by the very gradual addition of a solution of strychnia and then boiling the mixture. Crystals of strychniate of copper with a little ammonia will be obtained. These, when dry, can be first decolorized by sulphuric acid; the subsequent addition of chromate of potash *ground in with the aid of a glass rod*, will reveal the presence of strychnia.

In fact, these tests, particularly that with chromate of strychnia, may be considered *double* tests, because we have first the obtainment of a peculiar crystalline compound of strychnia, which is afterwards made to develop the characteristic effects by which strychnia is recognized.—*London Pharm. Journ.*, Sept. 1, 1856.

#### ON A NEW METHOD OF EXTRACTING THE ALKALOIDS STRYCHNIA AND BRUCIA FROM NUX VOMICA WITHOUT ALCOHOL.

By MR. JOHN HORSLEY.

The usual modes of obtaining strychnia from nux vomica are, besides being more or less expensive, owing to the alcohol used, far from satisfactory. This, in a toxicological point of view, is particularly the case, on account of the small quantity of strychnia naturally contained in the nut, and as the production of the alkaloid for its characteristic color test is a matter of importance, I have been induced to make several experiments on the different methods in use, and it appears to me that the simplest and best is that which I now propose, viz., to make an acetic extract by kneading up, say a quarter of a pound of nux vomica with an equal quantity of commercial acetic acid, and thinning the pulpy mass with two or three pints of cold water, allowing it to digest for a few days. The clear liquor must then be decanted off and

an equal quantity of fresh water poured on the mass to digest for a day or two longer, or till all soluble matter is extracted. The clear liquor is then to be decanted, and the remainder thrown on a flannel filter. The liquid which passes through should be mixed with the former decanted liquors and evaporated to a syrupy consistence (about three or four ounces). When this is cold, dilute it with an equal quantity of water, add liquor ammoniæ in excess, and set it by for a day or two that the strychnia may crystallize out, which is known by the various little white tufts which collect within the fluid as well as on the sides of the glass vessel. When the crystallization is complete, the dark green supernatant fluid is to be passed through a calico filter, and the residuum with the crystals adhering to the vessel collected thereon to drain, the dark green mass consisting of strychnia and brucia with resinoid matter is next to be scraped off and well dried in a water bath, digested in hot diluted acetic acid and the solution filtered. The strychnia and brucia may be thrown down by potassa, or the strychnia *only* by the addition of a solution of chromate of potassa, when a chromate of strychnia will be obtained free from brucia, provided the solution be tolerably acid which retains the brucia.

This chromate of strychnia being collected on a filter and well drained, can easily be *dechromatized* by digestion in liq. ammoniæ, and the strychnia will be obtained of a more or less *snowy whiteness*.

The quantity of strychnia actually contained in the nux vomica has not, I believe, been accurately ascertained, at least if I may judge from Professor Taylor's work on poisons, where that gentleman represents it at about 5-10ths or  $\frac{1}{2}$  a grain per cent. I cannot help thinking that the exhaustion in that case must have been but imperfectly performed, as my own experiments show that nearly twice that quantity is capable of being extracted; for in my first concentration of the liquor from a quarter of a pound of nux vomica I obtained as follows:—

From the 1st concentration 11 grains of strychnia

|   |     |   |   |   |   |
|---|-----|---|---|---|---|
| " | 2nd | " | 4 | " | " |
| " | 3rd | " | 2 | " | " |

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17 grains

This difference in quantity is necessary to be borne in mind by the medical practitioner when prescribing the extract and other preparations of nux vomica.—*London Pharm. Journ.*, Sept. 1, 1856.

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## ON A MEANS OF ESTIMATING THE MONEY VALUE AND STRENGTH OF COMMERCIAL CYANIDE OF POTASSIUM.

By THORNTON J. HERAPATH.

There is, I believe, no drug which is so frequently met with in an impure state as cyanide of potassium. This is owing not so much to the propensity which certain manufacturers appear to possess of adulterating the articles sold by them to the greatest possible extent, as to the difficulty which is experienced in preparing a pure article, and of purifying the impure cyanide after it has been manufactured. In a paper that was published in Liebig's *Annalen* for 1851, Professor Liebig has stated that commercial cyanide of potassium, prepared by his method, seldom contains more than 59 to 63.5 per cent. of pure cyanide. Having recently had occasion to purchase a considerable quantity of this chemical, I was induced to undertake a series of experiments, with a view of ascertaining the most expeditious method of testing the strength or money value of the various samples that were offered to me. The process I ultimately adopted was a modification of that proposed by Mr. Parkes for the determination of the percentage of copper in copper ores. It is based on the property which alkaline cyanides possess of decolorising the blue solution of cuprate of ammonia, or ammoniacal salts of copper. The first thing to be done in testing cyanide of potassium by this method, is to prepare a standard solution of ammonio-sulphate or ammonio-nitrate of copper. A certain known quantity of pure crystallised sulphate of copper,\* made by crushing the pure crystals of the shops into a mortar, and pressing the powder so obtained between folds of bibulous paper, is taken, and dissolved in water, or an equivalent quantity of pure metallic (electrotype) copper is dissolved in dilute nitric acid; and the solutions so prepared are then diluted with

\* $\text{Cu} + \text{O}, \text{SO}^3 + \text{Aq.}$

water, so as to measure 2000, 3000, or more, water grain measures, at 60°F. Supposing 390.62 grs. of the pure sulphate, or 100 grs. of metallic copper, in the form of nitrate, to have been taken, and diluted to 2000 grain measures, every 100 grs. of such solution will, of course, represent 5 grs. metallic copper, or 6.25 grs. of the prot-oxide of copper. 100 grs. of each of the samples of cyanide of potassium to be tested, are then dissolved in a sufficient quantity of water, and introduced into the colorimeters; an excess of ammonia is added, and the standard solution of copper is carefully added, out of a graduated burette, to the contents of each colorimeter in turn, until a faint blue coloration makes its appearance in each of the solutions. The quantities of copper, or of the solutions taken, then indicate the relative strength and money value of the samples of cyanide examined. Suppose, for example, one specimen took 100 measures, and a second 150 measures, of the copper solution, the relative strengths and values of such specimens are, therefore, as 100 to 150, or 2 to 3.

In order to render this process available in the determination of the actual strength of, or proportion by weight of pure cyanide of potassium existing in, the commercial cyanides, it is only necessary to ascertain the weight of pure cyanide of potassium that is required to decolorise 1 gr. of copper, in the form of ammonio-nitrate. I regret that the temporary loss of my notebook prevents me from giving the numerical result of my experiments on this point. The mode, however, by which this may be effected is as follows:—The strength of a solution of pure hydrocyanic acid (Scheele's acid) having been determined in the usual way, either by precipitation by silver, or by means of oxide of mercury, a certain known quantity of such acid, equivalent to 100 grs. of cyanide of potassium, is taken, and supersaturated by ammonia; the alkaline solution so prepared, is then tested with the standard copper solution, in the manner before described. The latter can then, if necessary, be diluted with water, so as to render it of uniform and convenient strength.—*The Chemist*, April, 1856.

## NEW PROCESS FOR PREPARING FORMIC ACID.

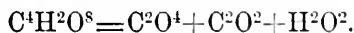
By M. BERTHELOT.

1. In a Memoir presented to the Academy, I have shown that oxide of carbon might be absorbed by potassa, fix the elements of water, and give rise to formic acid. This observation led me to seek whether it would not be possible to modify some of the reactions in which oxide of carbon is developed, in such a way as to combine this gas, in the nascent state, with the elements of water, and to obtain formic acid itself, easily and in abundance.

2. It is well known how troublesome are the present processes for obtaining this compound, the most simple of all organic acids. The ordinary way to obtain it is to treat sugar or starch with a mixture of sulphuric acid and a binoxide of manganese. This process is of great historical importance, for it enabled us to prepare formic acid without extracting it from ants, as was first done; but it is not free from inconveniences. Indeed, in the reaction just mentioned, a very great quantity of gas is developed; whence results the necessity for vessels of enormous capacity, which are frequently broken and corroded. Moreover, the acid obtained is mixed with various other substances, acid and neutral, produced simultaneously, which obliges us to purify the crude formic acid by converting it into formiate of lead, and crystallizing this body several times. These difficulties have been observed by all chemists, and have doubtless more than once stood in the way of the preparation of large quantities of formic acid, and of its employment in reactions.

3. I have succeeded in producing this body very easily, and in considerable proportion, taking oxalic acid as a starting point.

Oxalic acid submitted to the action of heat, is changed into carbonic acid, water, and oxide of carbon:—



At the moment of this decomposition, the water and oxide of carbon come in contact in the nascent state; it should be sufficient, then, to secure the intervention of conditions suitable for combining these two bodies; already, from the single fact of the distillation of oxalic acid, this combination begins to be effected,

according to Gay-Lussac's experiments; but the quantity of formic acid thus produced is always very small.

Now, I have observed that we may combine with the elements of water, all the oxide of carbon furnished by oxalic acid, and simply transform this substance into carbonic acid and formic acid.



It is sufficient to introduce another body operating by action of contact—glycerine. I have already noticed this fact, and I shall now deduce from it a new process for preparing formic acid.

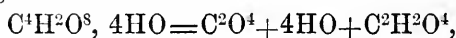
4. I operate as follows.

Into a retort, of the capacity of half a gallon, I introduce 1 kilogramme (about two pounds) of oxalic acid, 1 kilogramme of syrupy glycerine, and from 100 to 200 grammes of water. I adapt a receiver and I heat the retort very gently; the temperature should scarcely exceed  $100^{\circ}$  C. ( $212^{\circ}$  F.) A brisk effervescence is soon set up, and pure carbonic acid is disengaged. After about 12 or 15 hours, all the oxalic acid is decomposed; half of its carbon and oxygen are disengaged, under the form of carbonic acid gas; a small quantity of water, charged with formic acid distils over, and there remains in the retort the glycerine holding in solution almost all the formic acid. This acid may be extracted directly, by means of carbonate of lead; but the following method is far preferable:—

Pour into the retort a pint of water and distil. Replace the water which distils over, and continue the operation until six or seven quarts of distilled liquor has been collected. At this moment almost all the formic acid is volatilised with the water, and the glycerine alone remains in the retort. It may be used for decomposing a second kilogramme of oxalic acid, a third, and so on.

3 kilogrammes of ammoniacal oxalic acid,  $\text{C}^4\text{H}^2\text{O}^8 + 4\text{HO}$ , yielded, by this process, 1.05 kilogrammes of formic acid,  $\text{C}^2\text{H}^2\text{O}^4$ .

According to the formula—



3 kilogrammes of pure oxalic acid should furnish 1.09 kilogrammes of formic acid.



The difference between the results obtained and the calculated result is as small as possible ; moreover it may be explained by the impurities which commercial oxalic acid contains.\*

5. The following is the detail of the foregoing preparation :—

|             |   |   |   |   |              |
|-------------|---|---|---|---|--------------|
|             |   |   |   |   | kilogrammes. |
| Oxalic acid | . | . | . | . | 1            |
| Glycerine   | . | . | . | . | 1            |

We operated as has just been stated, and we obtained :—

|      |                                            |             |           |
|------|--------------------------------------------|-------------|-----------|
| 1st. | 2 litres of distilled liquid containing :— | formic acid | grms. 146 |
| 2nd. | 5.5 litres                                 | “ “ “ “     | 176       |
|      |                                            |             | <hr/> 322 |

The glycerine still retained some formic acid. We added to the retort a second kilogramme of oxalic acid. We obtained :

|      |                                           |             |           |
|------|-------------------------------------------|-------------|-----------|
| 3rd. | 1 litre of distilled liquid containing :— | formic acid | grms. 70  |
| 4th. | 4 litres                                  | “ “ “ “     | 250       |
|      |                                           |             | <hr/> 320 |

The glycerine still retained some formic acid. We added a third kilogramme of oxalic acid. We obtained :—

|      |                                            |             |           |
|------|--------------------------------------------|-------------|-----------|
| 5th. | 3 litres of distilled liquid containing :— | formic acid | grms. 180 |
| 6th. | 4.5 litres                                 | “ “ “ “     | 229       |
|      |                                            |             | <hr/> 409 |

To sum up :—3 kilogrammes of oxalic acid furnished 1.051 kilogrammes of formic acid.

This preparation is so regular that it may be executed without any difficulty, with any quantity, whatever, of oxalic acid. It does not require, moreover, much watching.

6. The only essential point, is not to hurry the decomposition of the oxalic acid by the glycerine. Indeed, if we operate too rapidly, if the temperature of the mixture rises too high, the disengagement of carbonic acid is at first accelerated ; but as soon as it has ceased, the temperature of the mass very soon reaches from 190° to 200° C. (374° to 392°F.), and a new gaseous dis-

\* 100 parts of the acid employed left a fixed residue equal to 2.07 parts.

engagement is produced; this is pure oxide of carbon. The liquid distilled throughout the operation thus conducted, does not contain one-tenth part of the formic acid which might be obtained by operating as I have said above.

7. This new phenomenon—disengagement of oxide of carbon—is due to the decomposition, at  $200^{\circ}\text{C}$ . ( $392^{\circ}\text{F}$ .), of the formic acid retained in solution by the glycerine, in the same way as ammoniacal gas is dissolved by water. Indeed pure formic acid, heated for some hours to between  $200^{\circ}$  and  $250^{\circ}\text{C}$ . ( $392^{\circ}$  and  $482^{\circ}\text{F}$ .), in sealed tubes, is, for the most part, decomposed into water and oxide of carbon; the glycerine exerts scarcely any accelerating influence on this decomposition. These observations may be turned to account, in the preparation of oxide of carbon by oxalic acid; when, if we heat oxalic acid, mixed, not with sulphuric acid, but with glycerine, we obtain, successively and separately, the two gases which sulphuric acid mixed in equal volumes produces; first, carbonic acid, and then, carbonic oxide. This last body may, therefore, be thus prepared pure, without washing with alkali.

8. However, a considerable interval of temperature separates these two successive phenomena; decomposition at  $100^{\circ}\text{C}$ . ( $212^{\circ}\text{F}$ .), of the oxalic acid into carbonic acid and formic acid, in contact with glycerine, then, further decomposition at  $200^{\circ}\text{C}$ . ( $392^{\circ}\text{F}$ .), of formic acid, into water and carbonic acid. Nothing is easier than to govern the reaction, and to obtain, by successive additions of water, the whole of the formic acid which oxalic acid can furnish.

Formic acid thus prepared, is very pure and completely free from oxalic acid. Saturated, by means of carbonate of lime, baryta, or lead, it furnishes by the first crystallisation, pure formiate of lime, baryta, or lead. 500 grammes of commercial oxalic acid produced about 500 grammes of pure formiate of lead.

It will be remarked, that the glycerine is found entire in the retort, at the end of each operation (with the exception of a very small quantity—about 1 gramme per litre—volatilised with the water), exactly like sulphuric acid in the preparation of ether. *London Chemist, from Comptes Rendus, March 3, 1856.*

## Varieties.

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*On the Manufacture of Iron and Steel without Fuel.* By MR. W. BESSAMER. —MR. BESSAMER asserted that crude iron contains about 10 per cent. of carbon; that carbon cannot exist at a white heat in the presence of oxygen without uniting therewith and producing combustion; that such combustion would proceed with a rapidity dependent on the amount of surface of carbon exposed; lastly, that the temperature which the metal would acquire would be also dependent on the rapidity with which the oxygen and carbon were made to combine, and consequently that it was only necessary to bring the oxygen and carbon together in such a manner that a vast surface should be exposed to their mutual action in order to produce a temperature hitherto unattainable in our largest furnaces. With a view of testing practically this theory, he had constructed a cylindrical vessel of three feet in height, somewhat like an ordinary cupola furnace, the interior of which was lined with fire-bricks; and at about two inches from the bottom of it inserted five tuyere pipes, the nozzles of which were framed of well-burnt fire-clay, the orifice of each tuyere pipe being about three-eighths of an inch in diameter. These were so put into the brick lining (from the outer side) as to admit of their removal and renewal in a few minutes when they were worn out. At one side of the vessel, about half-way up from the bottom, there was a hole made for running in the crude metal, and on the opposite side there was a tap-hole stopped with loam, by means of which the iron was run out at the end of the process. The vessel should be placed so near to the discharge hole of the blast-furnace as to allow the iron to flow along a gutter into it. A small blast cylinder would be required, capable of compressing air to about 8 lb. or 10 lb. to the square inch. A communication having been made between it and the tuyeres before named, the converting vessel would be in a condition to commence work. It would, however, on the occasion of its being first used after re-lining with fire-bricks, be necessary to make a fire in the interior with a few baskets of coke, so as to dry the brickwork and heat up the vessel for the first operation, after which the fire would have to be all carefully raked out at the tapping-hole, which would again be made good with loam. The vessel would then be in readiness to commence work, and might be so continued without any use of fuel, until the brick lining in the course of time became worn away and a new lining was required. The tuyeres are situated nearly close to the bottom of the vessel; the fluid metal will therefore rise some eighteen inches or two feet above them. It is necessary, in order to prevent the metal from entering the tuyere-holes, to turn on the blast before allowing the fluid crude iron to run into the vessel from the blast-furnace. This having been done, and the fluid iron run in, a rapid boiling up of the

metal will be heard going on within the vessel, the metal being tossed violently about, and dashed from side to side, shaking the vessel by the force with which it moves from the throat of the converting vessel. Flame will then immediately issue, accompanied by a few bright sparks; this state of things will continue for about fifteen or twenty minutes, during which time the oxygen in the atmospheric air combines with the carbon contained in the iron, producing carbonic acid gas, and at the same time evolving a powerful heat. Now, as this heat is generated in the interior of, and is diffused in innumerable fiery bubbles through the whole fluid mass, the metal absorbs the greater part of it, and its temperature becomes immensely increased; and by the expiration of the fifteen or twenty minutes before named, that part of the carbon which appears mechanically mixed and diffused through the crude iron has been entirely consumed. The temperature, however, is so high that the chemically-combined carbon now begins to separate from the metal, as is at once indicated by an immense increase in the volume of flame rushing out of the throat of the vessel. The metal in the vessel now rises several inches above its natural level, and a light frothy slag makes its appearance, and is thrown out in large foam-like masses. This violent eruption of cinder generally lasts five or six minutes, when all further appearance of it ceases—a steady and powerful flame replacing the shower of sparks and cinder which always accompanies the boil. The rapid union of carbon and oxygen which thus takes place adds still further to the temperature of the metal, while the diminished quantity of carbon present, allows a part of the oxygen to combine with the iron, which undergoes combustion, and is converted into an oxide. At the excessive temperature that the metal has now acquired, the oxide, as soon as formed, undergoes fusion, and forms a powerful solvent of those earthy bases that are associated with the iron. The violent ebullition which is going on mixes most intimately with scoriæ and metal, every part of which is thus brought into contact with the fluid, which will thus wash and cleanse the metal most thoroughly from the silica and other earthy bases which are combined with the crude iron, while the sulphur and other volatile matters which cling so tenaciously to iron at ordinary temperatures are drawn off, the sulphur combining with the oxygen, and forming sulphurous acid gas. The loss in weight of crude iron during its conversion into an ingot of malleable iron, was found, on a mean of four experiments, to be  $12\frac{1}{2}$  per cent., to which will have to be added the loss of metal in the finishing rolls. This will make the entire loss probably not less than 18 per cent., instead of about 28 per cent., which is the loss on the present system. A large portion of this metal is, however, recoverable, by treating with carbonaceous gases the rich oxides thrown out of the furnace during the boil. These slags are found to contain innumerable small grains of metallic iron, which are mechanically held in suspension in the slags, and may be easily recovered, by opening the tap-hole of the converting vessel, and allowing the fluid malleable iron to flow into the iron ingot moulds placed

there to receive it. The masses of iron thus formed will be perfectly free from any admixture of cinder, oxide, or other extraneous matters, and will be far more pure and in a sounder state of manufacture than a pile formed of ordinary puddle bars. And thus it will be seen, that by a single process, requiring no manipulation or particular skill, and with only one workman, from three to five tons of crude iron passes into the condition of several piles of malleable iron in from thirty to thirty-five minutes, with the expenditure of about one-third part the blast now used in a fiery furnace with an equal charge of iron, and with the consumption of no other fuel than is contained in the crude iron. To persons conversant with the manufacture of iron (said Mr. Bessamer,) it will be at once apparent that the ingots of malleable metal which I have described will have no hard or steely parts, such as are found in puddled iron, requiring a great amount of rolling to blend them with the general mass; nor will such ingots require an excess of rolling to expel cinder from the interior of the mass, since none can exist in the ingot, which is pure and perfectly homogeneous throughout, and hence requires only as much rolling as is necessary for the development of fibre; it therefore follows that, instead of forming a merchant bar or rail by the union of a number of separate pieces welded together, it will be far more simple and less expensive to make several bars or rails from a single ingot. Doubtless this would have been done long ago had not the whole process been limited by the size of the ball which the puddler could make. I wish to call the attention of the meeting to some of the peculiarities which distinguish cast steel from all other forms of iron—namely, the perfect homogeneous character of the metal, the entire absence of sand-cracks or flaws, and its greater cohesive force and elasticity, as compared with the blister steel from which it is made—qualities which it derives solely from its fusion and formation into ingots, all of which properties malleable iron acquires in a like manner by its fusion and formation into ingots in the new process; nor must it be forgotten that no amount of rolling will give to blister steel (although formed of rolled bars) the same homogeneous character that cast steel acquires by a mere extension of the ingot to some ten or twelve times its original length. One of the most important facts connected with the new system of manufacturing malleable iron is that all the iron so produced will be of that quality known as charcoal iron; not that any charcoal is used in its manufacture, but because the whole of the processes following the smelting of it are conducted entirely without contact with, or the use of, any mineral fuel; the iron resulting therefrom will in consequence be perfectly free from those injurious properties which that description of fuel never fails to impart to iron that is brought under its influence. At the same time this system of manufacturing malleable iron offers extraordinary facility for making large shafts, cranks and other heavy masses. It will be obvious that any weight of metal that can be founded in ordinary cast iron by the means at present at our disposal may also be founded in molten malleable iron, to be wrought

into the forms and shapes required, provided that we increase the size and power of our machinery to the extent necessary to deal with such large masses of metal. A few minutes' reflection will show the great anomaly presented by the scale on which the consecutive processes of iron making are at present carried on. The little furnaces originally used for smelting ore have been from time to time increased in size until they have assumed colossal proportions, and are made to operate on two or three hundred tons of materials at a time, giving out ten tons of fluid metal at a single run. The manufacturer has thus gone on increasing the size of his smelting furnaces, and adapting to their use the blast apparatus of the requisite proportions, and has by this means lessened the cost of production in every way. His large furnaces require a great deal less labor to produce a given weight of iron than would have been required to produce it with a dozen furnaces; and in like manner he diminishes his cost of fuel, blast, and repairs, while he ensures a uniformity in the result that never could have been arrived at by the use of a multiplicity of small furnaces. While the manufacturer has shown himself fully alive to these advantages, he has still been under the necessity of leaving the succeeding operations to be carried out on a scale wholly at variance with the principles he has found so advantageous in the smelting department. It is true that hitherto no better method was known than the puddling process, in which from 400 lb. to 500 lb. weight of iron is all that can be operated upon at a time; and even this small quantity is divided into homeopathic doses of some 70 lb. or 80 lb., each of which is moulded and fashioned by human labor, and carefully watched and tended in the furnace, and removed therefrom one at a time, to be carefully manipulated and squeezed into form. When we consider the vast extent of the manufacture, and the gigantic scale on which the early stages of the process is conducted, it is astonishing that no effort should have been made to raise the after-processes somewhat nearer to a level commensurate with the preceding ones, and thus rescue the trade from the trammels which have so long surrounded it. Before concluding these remarks, I beg to call your attention to an important fact connected with the new process, which affords peculiar facilities for the manufacture of cast steel.

At that stage of the process immediately after the boil, the whole of the crude iron has passed into the condition of cast steel of ordinary quality. By the continuation of the process, the steel so produced gradually loses its small remaining portion of carbon, and passes successively from hard to soft steel, and from soft steel to steely iron, and eventually to very soft iron; hence, at a certain period of the process, any quality of metal may be obtained. There is one in particular, which, by way of distinction, may be called semi-steel, being in hardness about midway between ordinary cast steel and soft malleable iron. This metal possesses the advantage of much greater tensile strength than soft iron. It is also more elastic, and does not readily take a permanent set, while it is much harder, and is not

worn or indented so easily as soft iron. At the same time, it is not so brittle or hard to work as ordinary cast steel. These qualities render it eminently well adapted to purposes where lightness and strength are specially required, or where there is much wear, as in the case of railway cars, which from their softness of texture soon become destroyed. The cost of semi-steel will be a fraction less than iron, because the loss of metal that takes place by oxidation in the converting vessel is about  $2\frac{1}{2}$  per cent. less than it is with iron; but as it is a little more difficult to roll, its cost per ton may be fairly considered to be the same as iron. But as its tensile strength is some 30 or 40 per cent. greater than bar iron, it follows that for most purposes a much less weight of metal may be used; so that, taken in that way, the semi-steel will form a much cheaper metal than any that we are at present acquainted with.

The facts which I have brought before the meeting are not mere laboratory experiments, but the result of working on a scale nearly twice as great as is pursued in our largest ironworks—the experimental apparatus doing 7 cwt. in thirty minutes, while the ordinary puddling furnace makes only  $4\frac{1}{2}$  cwt. in two hours, which is made into six separate balls, while the ingots or blooms are smooth, even prisms, ten inches square by thirty inches in length, weighing about equal to ten ordinary puddle balls.—*London Pharm. Jour. Sept. 1856.*

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*On the Utility of Bran in Bread as tending to aid Intestinal Evacuations.*  
By M. C. SAUCEROTTE, Chief Physician to the Luneville Hospital.—If, as appears to me certain, constipation is more frequent than it used to be, to what are we to attribute this fact? The causes are perhaps various, but there is one to which I am anxious to call the attention of my colleagues: because it seems to me the most general, and because it has hitherto been unobserved. I allude to the greater perfection to which we have brought *sifting the corn*, an operation the result of which is the extraction of all the bran contained in the flour, when done, as it now is, to 20 or 25 per cent., instead of 10 or 12 per cent., which used to be the amount removed, twenty years ago. Now, to obtain an exact idea of the results of this real or apparent perfection, it is necessary to know what is the effect of the bran on the hygienic and alimentary properties of the bread.

We should deceive ourselves, if we think that we may attribute perfect certainty to chemical results; in this instance at least, it is quite at fault. Nothing can possibly differ more than the analyses made of bran. Thus, M. Poggiale gives 34.57 per cent. of cellulose (ligneous matter), M. Payen only finds 4, M. Millon 9.7, M. Kekulé 9.2. M. Millon, it is true, thinks that he has found the cause of these variations in the difference which exists between the bran obtained by the usual grinding, and that obtained by grinding freshly washed corn: but this is a point which has yet to be determined. M. Poggiale thinks that bran is very valueless, because, according to his researches, it contains but 44 per cent. of assimilable sub-

stances, and 56 per cent. of unassimilable substances, and, finally, because dogs fed on it, lost weight, which was not the case when they were fed on bread. But, according to M. Magendi, the animals live on brown bread, and die when fed on white bread.

Finally, M. Mouriet considers that in the internal part of the pellicle, there exists a ferment which renders starch fluid, which has the property of converting this substance into sugar, which otherwise would be rejected by the intestines as unassimilable. Thus, if bread in which the bran is left is not so nourishing as bread which is deprived of it, this inferiority is compensated for by qualities which are important with respect to digestibility; it is, moreover, more rapid. Moreover, which is my chief point, whether from its fermenting properties, or by a mechanical effect of the ligneous matters which it contains, it has the effect of increasing the peristaltic movement of the intestines, and, consequently, of aiding the evacuations. I say nothing here but what has been known from time immemorial. The ancients, who made three kinds of bread, of which one was inferior (*panis confusaneus*), and another quite coarse (*panis furfuraceus*), knew quite well how they varied in this respect. Hippocrates (*De victis rationis*) makes special mention of it, as well as Galen. *Parum alit et facile, subsidet et quia furfur non nihil habet facultatis detersoriæ id circo irritatis intestinīs cito dejectur.* This is very explicit.

Having been frequently consulted by my patients, of the superior classes especially, for they lead the most sedentary life, frequently of studious habits, and in whom a more delicate diet renders constipation more frequent, I have requested them to eat brown bread for breakfast, and I must say that the effect has always answered to my wishes. Bran has at all times one inestimable advantage over medicinal drugs; it does not fatigue the digestive organs, and frustrate the intestinal contraction, which is, to the degree desired by nature, necessary for the regularity of the functions. Finally, it has not the disadvantage of medicinal substances, of losing its efficacy from habit, and thus requiring increased doses to keep up its action.

Liebig says that the separation of the bran from the flour is *rather injurious than useful to nutrition*. In old times, until the epoch of the Roman Empire, bolted flour was unknown. In many parts of Germany, especially in Westphalia, they use the bran with the flour in the manufacture of the bread called *pumpernickel*, and there never were people whose digestion was in a better state. Without seeking examples from the other side of the Rhine, may we not judge from the healthy condition of the French peasantry who eat, almost all over France, bread in which the bran is left?

Let us then understand, that bolting the flour is a measure of luxury, and not of hygiene. It is probable that in this matter there has been made merely one of those false progresses, sometimes met with in the history of the sciences, which is considered one on face of *a priori* reasoning, and on the value of which, experience frequently pronounces in a manner which is opposed to theory.



This question is not only important in a medical point of view; it has a further interest from actual circumstances; because, by using unbolted flour for bread, we augment the product at least a fifth, or a sixth. The government might, consequently, by reducing the sifting to 10 per cent., as it used to be, cause a considerable diminution in the expense of the food of the army, and that, without in any way injuring the health of the troops. Whatever may be determined on, it will at any rate be acknowledged that the subject is worth consideration.—*Lond. Chemist, from Jour. de Chim. Méd.*

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*On the Assimilation of nitrogen by Plants, and on the Action of Nitrates as Manures.* By THORNTON J. HERAPATH.

[Extract from a letter to Mr. John Watt.]

*Dear Sir* :—The March number of *The Chemist* contains translations of four valuable papers by MM. De Luca, Cloëz, Harting, and Ville, on the assimilation of the nitrogen of the air by vegetables, and on the natural formation of nitric acid in the soil. Having been for several years past engaged in investigating this subject, at the suggestion of the late Mr. Pusey, it may not perhaps be uninteresting were I to give you a short account of the conclusions at which I have arrived. They are as follows:—

1. That all soils contain an appreciable quantity of nitric acid, in the form of alkaline or earthy nitrates, (nitrates of soda or potassa, nitrate of lime, or nitrate of ammonia.)

2. That some soils contain a much larger proportion of these salts than others do.

3. That some fertile soils contain as much as 3 to 6-1000ths of alkaline or earthy nitrates.

4. That the presence of these salts in the soil is to be ascribed partly to the presence of the nitric acid, and nitrate of ammonia in rain water, and partly to the formation of nitric acid, from the spontaneous oxidation of the nitrogen of the air, and of that of decomposing animal and vegetable matters, present in the soil, or added to it in shape of manure.

5. That some soils possess the power of transforming free nitrogen and nascent nitrogen into nitric acid, in a higher degree than others.

6. That light porous soils generally effect nitrification more readily than dense and heavy soils.

7. That, *cæteris paribus*, a larger proportion of nitric acid is produced in hot, than in cold weather.

8. That the fertility of soil for certain plants appears to be caused by those soils possessing this property of transforming nitrogen into nitric acid in an eminent degree.

9. That nitrogen in the form of nitric acid, in general, acts better as a manure, than nitrogen in the form of ammonia.

10. That nitrogen usually acts best as a manure when in the form of

nitrate of ammonia, or—when nitrogenous organic matter is present in the soil—as free nitric acid, or as nitrate of potassa, soda, or lime.

11. That nitric acid, free or combined, acts both as a stimulant and true manure.

12. That most plants possess the property of decomposing the alkaline and earthy nitrates, and of transforming them into proteïn or albumenized compounds; others, such for instance, as the beet, radish, tobacco (?), &c., store them up unchanged in their tissues; whilst a third class of plants, on the contrary, such as the nettles, *prunella vulgaris*, *datura stramonium*, *parietaria officinalis*, *borago* (?), &c., actually appear to possess the power of transforming ammonia or nitrogenous compounds into nitric acid.

I deeply regret that my departure from England will prevent me from furnishing you with the numerical results of my analyses, from which these conclusions were deduced.

Perhaps, however, at some future time, I may find leisure to prepare them for publication.

I remain, dear Sir, yours very truly,

THORNTON J. HERAPATH.

Old Park, Bristol.

*The Chemist*, April, 1856.

## Minutes of the Philadelphia College of Pharmacy.

*Hall of the College, 9mo. 29, 1856.*

At a stated meeting held this evening. 14 members present.

Samuel F. Troth, First Vice President, in the Chair.

The minutes of the annual meeting were read, and adopted.

A. B. Taylor, Secretary of the Board of Trustees, read the minutes of the Board for the past six months.

Thomas Weaver, Richard Peltz, F. Chapman Hill, William C. Bakes, T. Morris Perot, M. Henry Kollock, have been elected members since the last meeting. William Weightman, recommended to the College for election, was on ballot unanimously elected a resident member.

Prof. Procter, Corresponding Secretary, read a letter received by him from M. Buignet, Secretary of the Society of Pharmacy, Paris, being a favorable answer to the tender of exchange of Transactions with that body.

The delegates elected to represent this College in the American Pharmaceutical Association reported, that owing to the inability of A. B. Taylor to attend, they elected Frederick L. John to substitute him, and having all attended, have the satisfaction of reporting that the meeting was one of uncommon interest and profit, and that in addition to the extended operations to be detailed in the published Transactions already partly in print,

a large amount of labor was assigned to different committees and individual members, the results of which will be reported at the next annual meeting, to be held in this city in September, 1857.

It is hoped the interest taken in this Association by the members of this College will not be less than that manifested in the other cities in which meetings have been held, and that Philadelphia, having been the birth-place of the Association, will witness the most spirited and interesting meeting yet held.

E. Parrish, Chairman of the Executive Committee of the American Pharmaceutical Association, informed the College that the Association had instructed him to deposit the accumulated manuscript and other documents and effects of the Association, in a suitable temporary depository in Philadelphia, and on motion, it was

*Resolved*, That the College building be tendered for the deposit and preservation of the manuscript and other property of the American Pharmaceutical Association.

The Chairman appointed E. Parrish, Henry C. Blair, and W. Procter, Jr., the Obituary Committee for the ensuing year.

The semi-annual election for eight members of the Board of Trustees, resulted in the choice of the following :

Thomas P. James,

Wm. J. Jenks,

A. B. Taylor,

H. C. Blair,

Jacob L. Smith,

Evan T. Ellis,

S. S. Garrigues,

• C. Bullock.

On motion, adjourned.

EDWARD PARRISH, *Secretary*.

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## Minutes of the Maryland College of Pharmacy.

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*Baltimore, July 3, 1856.*

The College met at 4 o'clock, P. M., the President in the chair. Upon calling the roll ten members answered to their names. The minutes of the preceding meeting were then read and adopted. Mr. Smith, from the Committee on Certificates of Membership, stated that the Committee had endeavored to procure the completion of the engraving, but without success, and that impressions of the plate would no doubt be laid before the next meeting of the College.

Letters accepting honorary membership, conferred by the College at its meeting in May, from Professors W. E. A. Aiken, William Procter, Jr., David Stewart, Lewis H. Steiner, Christopher Johnston, and Mr. Wm. Smith Reese,

were read and ordered to be placed on file The Treasurer made the following report, which was read and accepted :

*J. B. Baxley, Treasurer, in account with Maryland College of Pharmacy.*

Amount of cash received from March 13th to July 1st, 1856,

|                       |   |   |   |   |          |
|-----------------------|---|---|---|---|----------|
| For installation fees | - | - | - | - | \$180.00 |
|-----------------------|---|---|---|---|----------|

|                                                    |  |          |  |  |
|----------------------------------------------------|--|----------|--|--|
| Amount expended as per vouchers to July 1st, 1856, |  | \$ 41.47 |  |  |
|----------------------------------------------------|--|----------|--|--|

|                               |   |   |  |        |
|-------------------------------|---|---|--|--------|
| Balance in hands of Treasurer | . | . |  | 138.53 |
|-------------------------------|---|---|--|--------|

|  |  |  |  |              |
|--|--|--|--|--------------|
|  |  |  |  | <hr/> 180.00 |
|--|--|--|--|--------------|

|                                               |  |         |  |  |
|-----------------------------------------------|--|---------|--|--|
| Amount due the College for installation fees, |  | \$25.00 |  |  |
|-----------------------------------------------|--|---------|--|--|

|         |                          |
|---------|--------------------------|
| Signed, | J. B. BAXLEY, Treasurer. |
|---------|--------------------------|

On motion of Mr. Moore, a committee was appointed to wait on the Apothecaries of the city to ascertain what number of students, resident in the city, may be expected to attend the lectures during the ensuing fall and winter. The Chairman appointed Messrs. Smith, Moore and Thompson.

Mr. Baxley gave notice of a resolution to amend the By-Laws in Law 2nd, Section 4th, relating to the receiving of money by the Secretary; he proposes to strike out this section and to insert the word "receive" after the words "The Treasurer shall," in section 1st of law 3d.

The term of office of the President, Secretary, Treasurer and one of the Board of Examiners having expired, the College, in accordance with the requirement of the Charter, went into an election for those officers respectively. The following gentlemen were nominated and unanimously re-elected :

GEORGE W. ANDREWS, *President.*

WILLIAM S. THOMPSON, *Secretary.*

J. B. BAXLEY, *Treasurer.*

JOSEPH ROBERTS, *Examiner.*

Mr. Baxley proposed to adopt a formula for Stokes' Liniment, to be used by members of the College when that preparation is prescribed by Physicians; his attention had been directed to the matter by a physician, who states that his patients had been furnished with the article differing greatly, both in strength and appearance, from different shops. Mr. B. further stated that his object was to produce uniformity in the preparation. The formula now offered he believed to be the original as prescribed by Dr. Stokes. It is as follows :

|                     |          |    |
|---------------------|----------|----|
| R. Ol. Terebinth.   | f. ℥iij. |    |
| Acid. Acetic. fort. | f. ℥ss.  |    |
| Vitellum Ovi        | j.       |    |
| Aquæ Rosæ           | f. ℥iij. |    |
| Ol. Limonis         | f. 3j.   | M. |

This formula he had used for many years past, and upon inquiry he had found that several pharmacutists of his acquaintance had used the same.

Mr. Roberts remarked that his formula differed in the proportion of the ingredients from that offered by Mr. Baxley, but that it had fully answered the expectations of physicians who had used it. Mr. Grahame, had also used a different formula, and his experience in the matter was similar to that of Mr. Roberts.

On motion of Mr. Moore, the formula offered by Mr. Baxley was adopted.

Mr. Moore gave notice of a proposed amendment of the By-Laws; he proposes to modify Section 2nd of Law 2nd, so that the Secretary may give notice of the meetings through the post office, instead of inserting a notice in one of the daily morning newspapers, as heretofore.

On motion the College adjourned.

#### MINUTES OF THE BOARD OF TRUSTEES.

*Baltimore, July 3, 1856.*

The Board met after the adjournment of the College, the President in the Chair; 7 members present.

The Board of Examiners reported favorably upon the application of Mr. Eugene J. T. Russell for membership, and he was unanimously elected.

On motion, Professors Grahame and Frick were authorized to select suitable bottles for specimens of Materia Medica.

On motion, it was resolved to request the Professors to prepare an advertisement of the School of Pharmacy, to occupy a page in the advertising department of the September number of the American Journal of Pharmacy.

On motion, the Board adjourned.

W. S. THOMPSON, Secretary.

#### MINUTES OF THE COLLEGE.

*Baltimore, Aug. 7, 1856.*

The College met, pursuant to adjournment, the President in the Chair. The Secretary being absent, Mr. Phillips was appointed Secretary pro tem. The roll being called, eleven members answered to their names.

Mr. Grahame, of the Committee on the Plate, reported, that on account of several inaccuracies in the proof sheet, the Plate would not be ready until the next meeting. The Committee on room being absent, no report was made.

The amendments offered at the previous meeting by Mr. Baxley on Law 2nd, Section 2nd, and Law 2nd, Section 4th, and by Mr. Moore on Law 2nd, Section 2nd, were then severally taken up and adopted.

On motion of Mr. Grahame, it was resolved that when the College adjourns, it do adjourn to 4 o'clock, P. M., Aug. 18th. No other business being offered, the College adjourned.

*Baltimore, Aug. 18, 1856.*

The College met pursuant to adjournment, the First Vice President, Mr. Grahame, in the Chair. Mr. Phillips acted as Secretary pro tem. Upon

calling the roll, 6 members were found to be present. The minutes of the preceding meeting were then read and adopted.

On motion, the College adjourned until 4 o'clock, P. M., Friday, Aug. 22nd, 1856.

L. PHILLIPS, Sec., pro tem.

*Baltimore, Aug. 22, 1856.*

The College met by adjournment, the President in the Chair; sixteen members present. The proceedings of the previous meeting were read and approved of.

The Committee on the plate for Certificate of Membership, reported its completion, and presented a proof impression for the inspection of members, which, after examination, was unanimously approved of, and on motion, the Certificate was adopted by the College.

The Committee appointed at a previous meeting to procure a suitable room for the purposes of the College was called upon for a report. The chairman, Mr. Baxley, stated that in consequence of absence from the city and other engagements, he had not been able to attend to the matter. The Committee was requested to make a report at the next meeting.

Mr. Moore, from the Committee, appointed at a previous meeting, to wait on the apothecaries of the city, to ascertain the probable number of the class at the lectures, reported that the Committee had performed the duty assigned them, and that so far as they could ascertain, the class will number about 20 students.

The College then went into an election for five delegates to the National Pharmaceutical Convention, and elected the following gentlemen on the first ballot, viz:—George W. Andrews, Charles Caspari, Israel J. Grahame, J. Jacob Smith and J. Faris Moore.

On motion of Mr. Baxley, Messrs. Andrews, Caspari, Grahame, Smith and Moore were constituted a Committee of reception, to be in waiting at the rooms of the College of Dental Surgery on the afternoon of the 8th of September next.

On motion of Mr. Thompson, the same gentlemen were authorized to act as a discretionary Committee of Arrangements.

On motion the College the adjourned.

#### MINUTES OF THE BOARD OF TRUSTEES.

*Baltimore, Aug. 27, 1856.*

The Board met at 4 o'clock, P. M., upon call of the Chairman, the President in the Chair; seven members present.

The President stated that the object of the meeting was to make arrangements for furnishing and fitting up the room of the College.

Mr. Baxley from the Committee on room stated that the Committee had rented a room at the corner of Calvert and Water streets, at \$100 per annum, from the 1st of September.

On motion of Mr. Baxley, a Committee of three was appointed to procure the necessary furniture and to fit up the room, the cost not to exceed \$75. The chairman appointed Messrs. Moore, Sharp and Thompson.

On motion of Mr. Baxley, it was resolved to invite the Professors to attend at the next meeting of the Board.

On motion of Mr. Sharp, the Treasurer was authorized to have the Certificates of membership filled up, and to deliver them to the members upon receipt of the fee.

The Board then adjourned to meet on Thursday, September 4th, at 3 o'clock, P. M.

W. S. THOMPSON, Secretary.

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## Editorial Department.

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MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Our readers will find a report of the proceedings of the Baltimore meeting at the beginning of the present number, which we have compiled from the rough minutes and papers of the Secretary, and they can form some opinion of the character of the gathering from their perusal. In point of numbers and interest it was the most interesting occasion we have yet had, and though the immediate results are not as extensive as may have been anticipated, yet the prospect for the next meeting, arising from the action of committees on scientific and other subjects, is very promising with even ordinary interest on their part. The greatest harmony and good feeling prevailed, and the hospitality and kindness of our Baltimore brethren was as abundant as usual. Notwithstanding the Resolution adopted in New York last year to discourage the expensive habit of giving public entertainments on the occasions of the meetings of the Association, our Baltimore friends exceeded any effort of the kind hitherto made; and whilst among those who disapprove of these manifestations, as being burthensome to the givers and too often exceeding the bounds of moderation in their conduction, we have considerable disposition to excuse it in this instance, from the influence it is said to have had in drawing closer the cords of professional sympathy among the brethren there than on any former occasion. The meeting adjourned to convene in Philadelphia next September, when we hope to have the largest and most interesting meeting that has yet occurred, under the impetus given at Baltimore.

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APOTHECARIES ASSOCIATION OF THE DISTRICT OF COLUMBIA.—Mr. Harbaugh, of Washington, has sent us a copy of a Bill presented to the last session of Congress, designed to incorporate the above institution, of

which he is the president, and which passed the Senate, and failed in the House only by not being reached, owing to the pressure of other business. It is therefore probable that, at the coming session, the Association will be chartered. The bill authorizes them to hold property to the amount of \$20,000, to mortgage and sell the same, to give instruction in the several branches of a pharmaceutical education, and grant diplomas to such students as may be qualified, &c.

From the well known energy of some of the gentlemen connected with the "Association," we believe it will be sustained until it takes root and produces fruit. We believe that the Institution will in time be useful to government, and its cabinet may be made the receptacle of many valuable products, collected from abroad through the agency of the Patent Office and the navy.

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ALCOHOLOMETRIC TABLES.—A correspondent desires the publication of a portion of the tables, used by the Government in the examination of alcohol. We have not been able to give the space in this number, but will endeavor to do it in a future issue.

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COMPOUND SYRUP OF SQUILL.—The following note has been received from a correspondent in Boston :

*Boston, Oct. 1, 1856.*

DEAR SIR :—I observed in your last Journal a method proposed for making the compound syrup of squills, in which dilute acetic acid is used as the solvent of the squill. I wish to enquire whether acetic acid is, or is not, incompatible with the tartar emetic dissolved in the syrup? Tartar emetic is marked as incompatible with acetic acid in Paris Pharmacologia. On the other hand, I obtained crystals resembling, in taste and appearance, crystals of tartar emetic, from a solution of that salt in dilute acetic acid. W.

Acetic acid under, the circumstances indicated above, does not decompose tartrate of antimony and potassa.

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*Lectures on Materia Medica and Therapeutics, delivered in the College of Physicians and Surgeons of University of New York. By JOHN P. BECK, Late Prof. Materia Medica, &c. Prepared for the press by his friend, C. R. GILMAN, M. D., &c. Second edition. New York: S. S. & W. Wood, 1856. Pp. 559, 8vo.*

This book commences with an introductory chapter, a few words of which are directed to the manner in which the materia medica will be considered, whilst the larger portion is directed to therapeutics, pointing out the author's mode of treating the subject. The action of medicines physiological and curative, the modes or forms of their application, and the author's classification of remedies are then considered. The following chapter is devoted to proximate principles of drugs, which he arranges thus : 1st. Organic Acids and their Salts. 2d. Organic Alkalies and the Substances allied to them. 3d. Oleaginous, Resinous and Bituminous Princi-



ples. 4th. Alcoholic and Ethereal Principles. 5th. Sugars and their Congeners.

The descriptions of these principles are very brief, and they extend only to the more prominent articles. The following extract will explain.—

“*Gallic Acid*.—This acid is formed from tannin by a kind of fermentation. It is obtained from the gall nut. When pure, it is in the form of small, feathery and nearly colorless crystals, which have a fine silky lustre. Its taste is slightly acid and stiptic; it is soluble in 100 parts of cold and in 3 parts of boiling water. Gallic acid does not precipitate gelatin, by which it is distinguished from tannic acid, with which it is often associated. With a proto salt of iron, no change is produced, but with a per salt a deep bluish black precipitate falls, which disappears when the liquid is heated, from the reduction of the peroxide of iron to the protoxide at the expense of the gallic acid. With bases this acid forms *gallates*.”

The descriptions of the alkaloids are even more brief. We believe this chapter might have been dispensed with, as the same principles are noticed to a greater or less extent under the several heads of drugs producing them, with a few exceptions.

The following is the author's classification of remedies, viz.: Emetics, Cathartics, Anthelmintics, Sialagogues, Diaphoretics, Expectorants, Diuretics, Emenagogues, Parturients, Sedatives, Refrigerants, Demulcents, Narcotics, [Anæsthetics added by the Editor,] Stimulants, Nervines, Tonics, Astringents, Revulsives and Alteratives. By far the larger portion of the work is devoted to therapeutics, and only so much of materia medica is brought in as to introduce the several subjects to the student's attention, except in a few instances, as opium, senna, cinchona, &c. The author makes no attempt at a scientific view of materia medica, and many of the details are by no means properly brought out. For instance, in speaking of cinchona he does not describe the botanical species yielding the barks. Quinidia is not named; and most of the recent discoveries growing out of the introduction of the Columbian barks for manufacturing quinia are not noticed.

In regard to nomenclature the author bestows very little care, as he confines himself to no Pharmacopœia. The chapters are sometimes headed with Latin names and sometimes with English, and in the preparations an equal disregard of uniformity is exhibited, of which the following is an example: *Calumba*. *Morphine*. *Pulvis Opii et Ipecacuanhæ Compositus*. *Hydrargyri Nitrico-oxidum*. *Castor Oil*. *Sulphas Sodæ*, &c. The author does not appear to have had much regard for the United States Pharmacopœia as a national guide in this respect.

As the work is not intended for the pharmacist, but is addressed to the medical student and physician, more especially the student, it is to be regretted that the nomenclature of our Pharmacopœia was not employed. Such omissions are one cause of the great want of uniformity in the language of prescriptions. As a text-book for the materia medica, Dr. Beck's work falls short of what we should esteem required by the student, unless

its use is to be viewed as merely auxiliary to lectures on therapeutics, referring the student to the Dispensatories for further information. It is not full enough in any other view, nor are the facts brought up to the present time as fully as should be the case. In reference to that larger and more important portion of the "Lectures" devoted to therapeutics, we will leave its examination to the medical journals. From a glance over the pages we believe that in this portion the chief merit of the work will be found, and much useful information communicated, not only because more space is devoted to it, but because the author, as a teacher, appears to have directed his hearers more to the action and application of medicines than to the remedies themselves; a course quite usual with Professors of *Materia Medica*, and satisfactorily accounting for the limited scientific knowledge of *materia medica* and pharmacy possessed by a large proportion of the medical profession.

The book is well printed on good good paper, and in a style creditable to the enterprising publishers, Messrs. Wood, of New York.

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*A Treatise on Therapeutics and Pharmacology or Materia Medica.* By GEORGE B. WOOD, M. D., late President of the American Medical Association, &c., &c. *In two volumes.* Philad.: J. B. Lippincott & Co. London: Trübner & Co. 1856. pp. 1741.

We acknowledge the reception of these volumes from the author, but have not yet had time to examine them closely. A slight inspection gives promise that they fully sustain the author's reputation as a close observer and accurate writer.

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MARYLAND COLLEGE OF PHARMACY.—Our readers will observe at page 9 of the advertising sheet, the announcement of the School of Pharmacy of the Maryland College, which opens its session the third of November.

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